

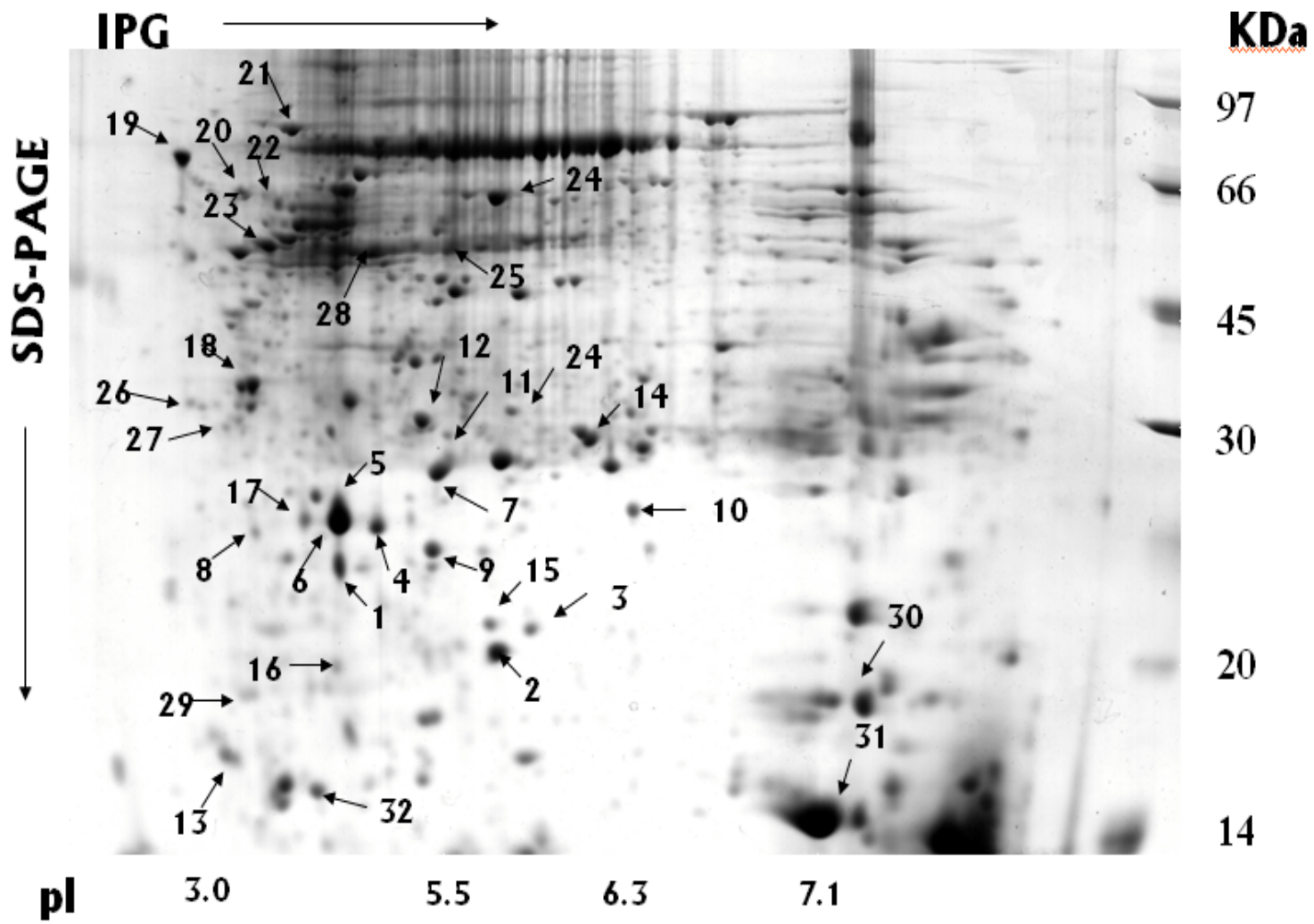


Figure 21. 2-DE proteomic pattern of thyroid tissue with papillary carcinoma

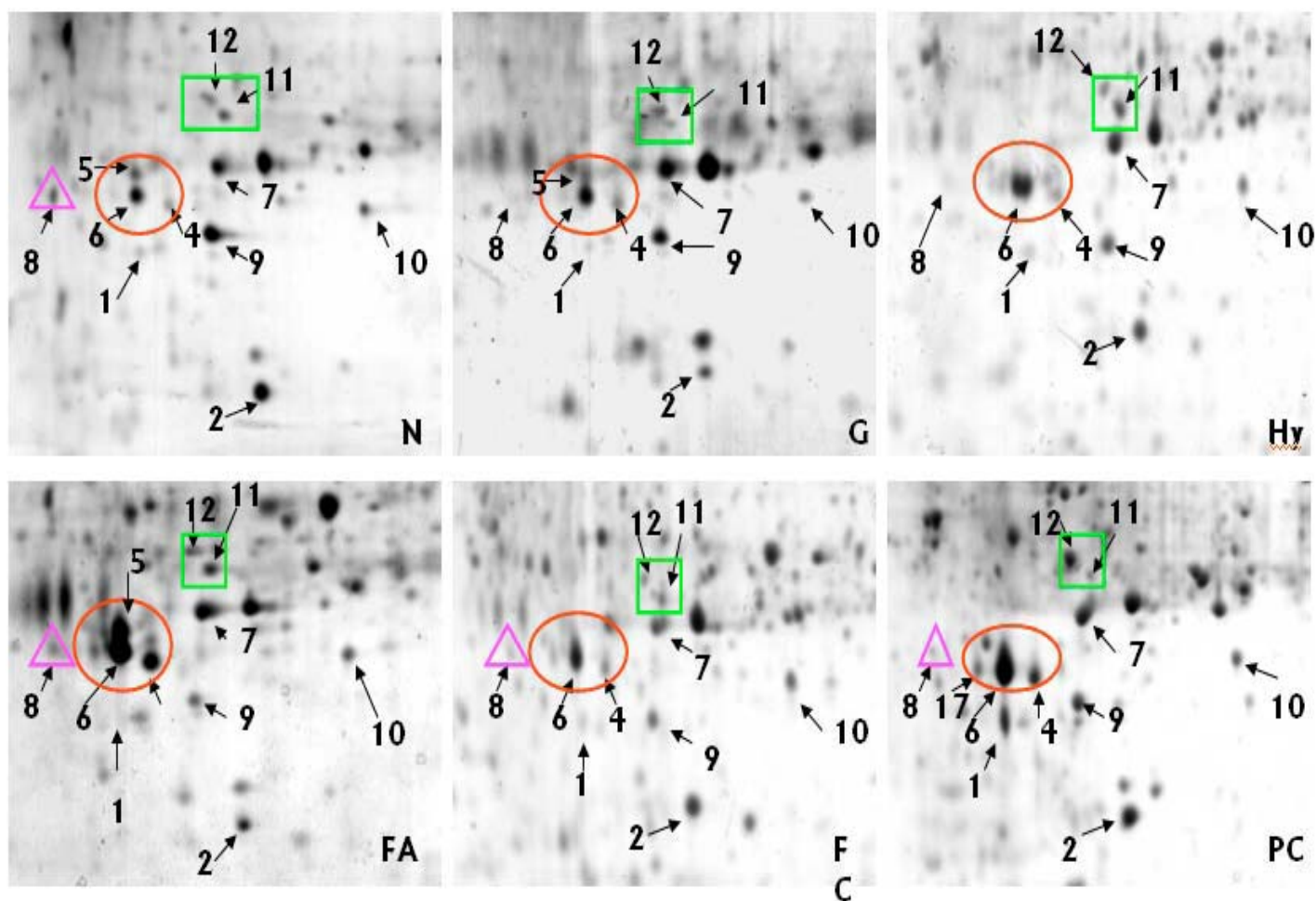


Figure22. Focal area of 2-D gel electrophoresis (molecular mass between 15-30 kDa with pI between 4.7 to 6.5) pattern of 6 different cases of thyroid diseases (N, G, Hy, FA, FC and PC).

Thyroid proteins were run on 2-DE and the proteins were transferred from the gel to a nitrocellulose membrane (Hybond ECL) by western blotting. Incubation with mouse anti-cathepsin B (anti-CB) antibody (Chemicon), followed by treatment with HRP-labelled rabbit anti-mouse IgG allowed detection of procathepsin B, CB1, CB2 and CB3. One-dimensional SDS-PAGE immunoblotting was also used to study cathepsin B from different cancer tissues such as colon, breast, ovary and liver cancers. The results indicate that cathepsin B is only highly expressed in thyroid cancer tissue. In lung, one band of proCB is observed in lung cancer tissue, and a light band of CB is found in liver and lung cancer tissues.

The protein, galectin 3, is beta-galactoside binding protein, possibly involved in tumor progression. It is a very basic protein, making it hard to detect by color staining in 2-DE, thus mouse anti-galectin-3 antibody (Research Diagnostics, Inc.) was used, followed by incubation with HRP-labeled rabbit anti-mouse IgG and detection by chemiluminescence. The expression of galectin-3 was studied in thyroid tissues, including normal thyroid (N), goiter (G), diffuse hyperplasia (Hy), follicular adenoma (FA), follicular carcinoma (FC) and papillary carcinoma (PC) by SDS-PAGE immunoblotting. The immunoreactivity of galectin 3 was strongest in PC, where 3-4 bands were found, but weak in N, Hy, G and in six out of eleven cases of FA while no immunoreactive bands were seen in FC. When two dimensional immunoblotting of galectin-3 was performed in PC, at least 3 spots were found at MW 34/pI 7.1, 32/7.5 and 30/7.5.

6.3.3. Comparison of Cholangiocarcinoma and Hepatocellular Carcinoma Cell Lines by Proteomics.

Cholangiocarcinoma (CCA), a malignant tumor derived from bile duct epithelium, occurs with a higher incidence in tropical countries, such as Thailand. Distinguishing CCA from hepatocellular carcinoma (HCC) of the liver often requires the use of histochemistry, so molecular markers for diagnosis and prognosis are still required. We have, therefore, compared the proteomic map of a human cholangiocarcinoma cell line (HuCCA-A1) to two human hepatocellular carcinoma cell lines (HepG2 and HCC-S102) (Figure 23, 24). Our results show that HuCCA-1 expressed a unique pattern of proteins, and forty-three major proteins were identified by matching to the map of the MCF-7 cell line, and by MALDI-TOF-MS and ESI/MS/MS. Cytokeratins CK8 and CK18 were overexpressed in both HuCCA-1 and HCC, while CK7 and CK19 were only expressed in HuCCA-1. Four specific proteins with MW/pI 57.2/5.21 (U1, vimentin), 42.2/6.20 (U2), 43.2/6.20 (U3, EF-TU), and 42.2/6.40 (U4, unidentified) were absent from HepG2. U2 showed high expression in HuCCA-1, while U1 and U4 showed high expression in HCC-S102. U2 could be

separated into 2 proteins, U2/1 (alpha-enolase) and U2/2 (not identified) by using IPG pH4-7. Galectin-3 showed high expression level in HuCCA-1 by 1-DE immunodetection, and gave only one spot with MW 32.9 kDa and pI 8.29 on 2-DE immunoblotting. Thus, certain proteins, namely CK7, CK19, U2/2 and galectin-3, may be good markers useful for differential diagnosis of cholangiocarcinoma compared to hepatocellular carcinoma.

6.4 Anti-cancer Compounds from Medicinal Plants

As part of the Chulabhorn Research Institute's comprehensive research program on cancer, we are also screening medicinal plants for anti-cancer activities in collaboration with Dr. Somsak Ruchirawat (Chulabhorn Research Institute and Mahidol) and Dr. Supanna Techasakul (Chulabhorn Research Institute and Kasetsart University). Part of the work involves screening for cytotoxic activities using Thai cancer cell lines HuCCA (human cholangiocarcinoma) and HCC-S102 (human hepatocellular carcinoma), as well as other cells. In addition, we also perform functional screening tests, such as inhibition of the *in vitro* invasion of extracellular matrix by cancer cells.

6.4.1 Cytotoxic Activities of Colchicine Derivatives

Colchicine is a very toxic compound, which acts on tubulin. We have measured the cytotoxic activities of various colchicine derivatives (Figure 25), synthesised by Dr. Somsak Ruchirawat's group. The aim of our studies is two-fold, first is that there may be some compounds, which are more effective than colchicine and that may lead to more effective treatment with lower dose. Secondly, some compounds may be more effective on cancer cells than on non-cancer cells, which should lead to greater specificity in treatment, with fewer side effects. In either case, such analogs may more successfully treat diseases, in which colchicine is presently used. Another goal is to study the precise interaction between colchicine and tubulin dimers, through studies using proteomic techniques. Thus, we have studied the cytotoxic effect, as IC_{50} (concentration causing 50% inhibition of cell growth), of several derivatives on three cell lines: MCF-7 (breast cancer cell line), HepG2 (hepatoblastoma cell line) and HCC-S102 (hepatocarcinoma cell line from Thai patient).

The effect of various compounds (Figure 25) on the above cell lines, expressed as IC_{50} values are shown in Table 12. The two liver cancer cell lines (HepG2 and HCC-S102) gave nearly the same effect with all compounds. Demethylation or substitution of the methoxy groups on the A ring decreases the potency (derivatives 2-5). Colchicine peroxide (derivative 6), N-(Trifluoroacetyl) demecolcine (derivative 15) and N-Deacetylthiocolchicine (derivative 24) specifically decrease the potency of breast cancer cell lines. The lower potency of

derivatives 7-9 maybe a result of increasing steric bulk. On the B ring, the acetamide group can be replaced by other alkyl amides with retention of potency (derivative 14 and 20). However some groups cause decreased potency (derivative 17, 21 and 22). Demethylation or substitution of the methoxy groups on the C ring decreases the potency (derivative 13, 18 and 19). 10-Thiocolchicine (derivative 23) appears to be more potent than colchicine towards liver cancer cell lines.

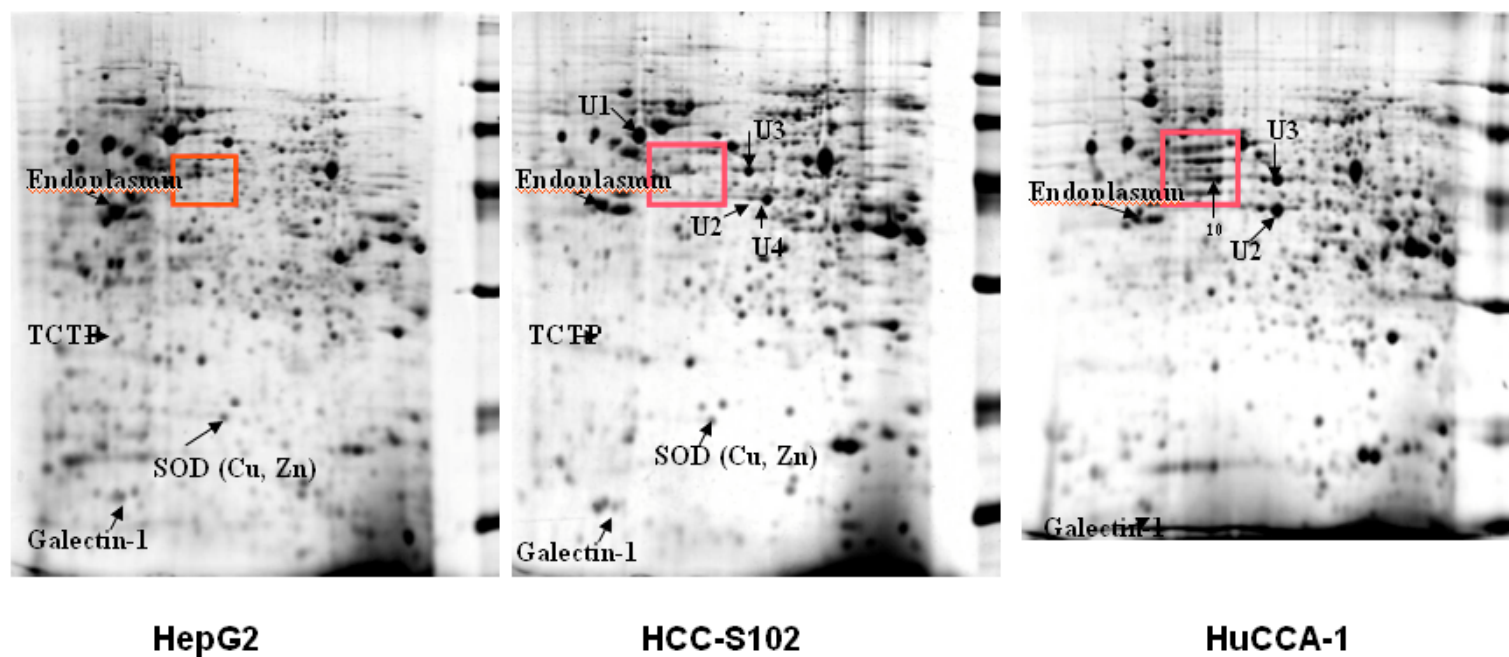
6.4.2 Plant Extracts with Effect *In Vitro* Invasion Capability

Liver cancer is one of the most common causes of death from cancer in Thailand, and ranks fourth in terms of cancer mortality throughout the world. The high rate of recurrence, together with the mainly intrahepatic metastasis, often leads to an unsatisfactory outcome, as shown by the very low relative 5-year survival rate of 5%. A new approach to cancer therapy focuses on metastasis, and requires anti-metastatic agents, with little or no cytotoxic activity, which can be used for long-term treatment, in combination with conventional short-term treatment with cytotoxic anticancer drugs. We have screened the anti-invasive activity of several Thai plant extracts on a human hepatocellular carcinoma cell line HCC-S102 using an *in vitro* invasion assay.

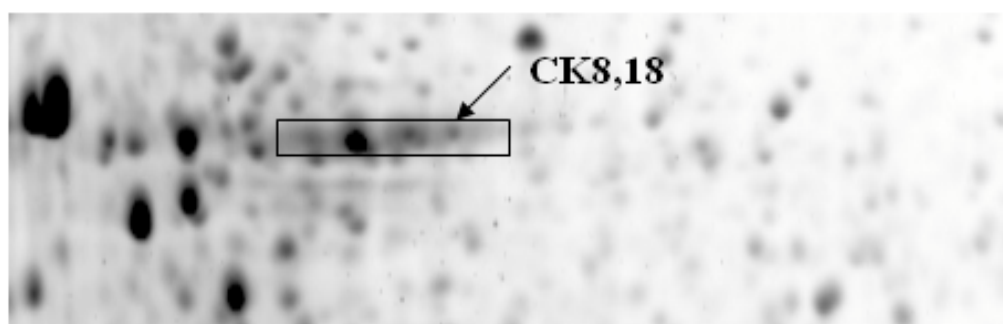
Several Thai herbs were collected from forests in Thailand. Both aqueous and dichloromethane extracts were previously tested for cytotoxicity with an oral cancer cell line and a cholangiocarcinoma cell line. Extracts with low cytotoxic activity ($IC_{50} > 100 \mu\text{g/ml}$) were chosen for further study. The extracts were tested for inhibitory effect on the invasion of cancer cells at a non-lethal concentration, 50 $\mu\text{g/ml}$ (Figure 26). An aqueous extract of *H. parasitica* exhibited 72% inhibition.

The aqueous extract of *H. parasitica* was chromatographed in a silica gel column. Anti-invasion and cytotoxic activity of the eluted fractions were assayed at 50 $\mu\text{g/ml}$, in comparison to cisplatin (10 $\mu\text{g/ml}$). The highest anti-metastatic activity (83% inhibition of invasion) was found in a fraction (F-6), which had low cytotoxic activity (96% survival) (Figure 27). In comparison, the anticancer drug cisplatin, which causes interstrand cross-links in DNA, did not affect the cancer cell invasion, at a concentration having substantial cytotoxic activity (47% survival).

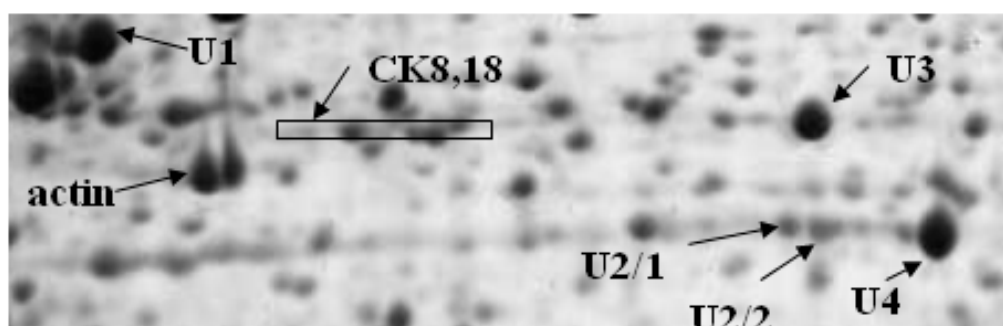
Figure 23: Proteomic Maps of Hepatocellular (HepG2, HCC-S102) and Cholangiocarcinoma (HuCCA-1) Cell Lines.



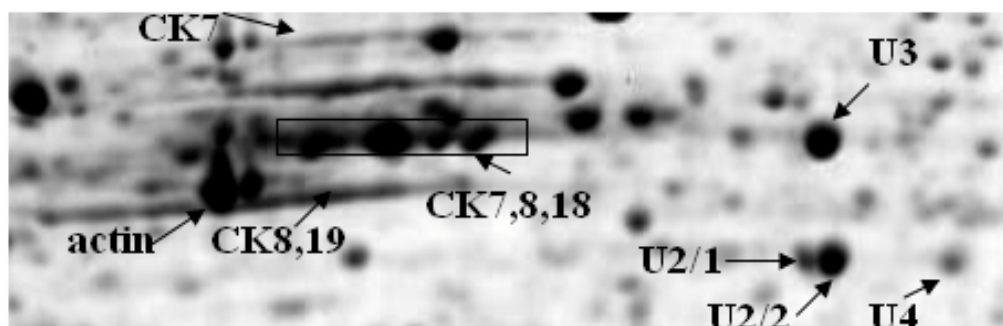
TCTP, SOD absent HUCC; U2 high in HUCC; U1, U4 high in HCC-S102; U3 high in both



HepG2



HCC-S102



HuCCA-1

Figure 24. Focal area showing spots differing between the HepG2, HCC-S102 and HuCCA-1 cell lines

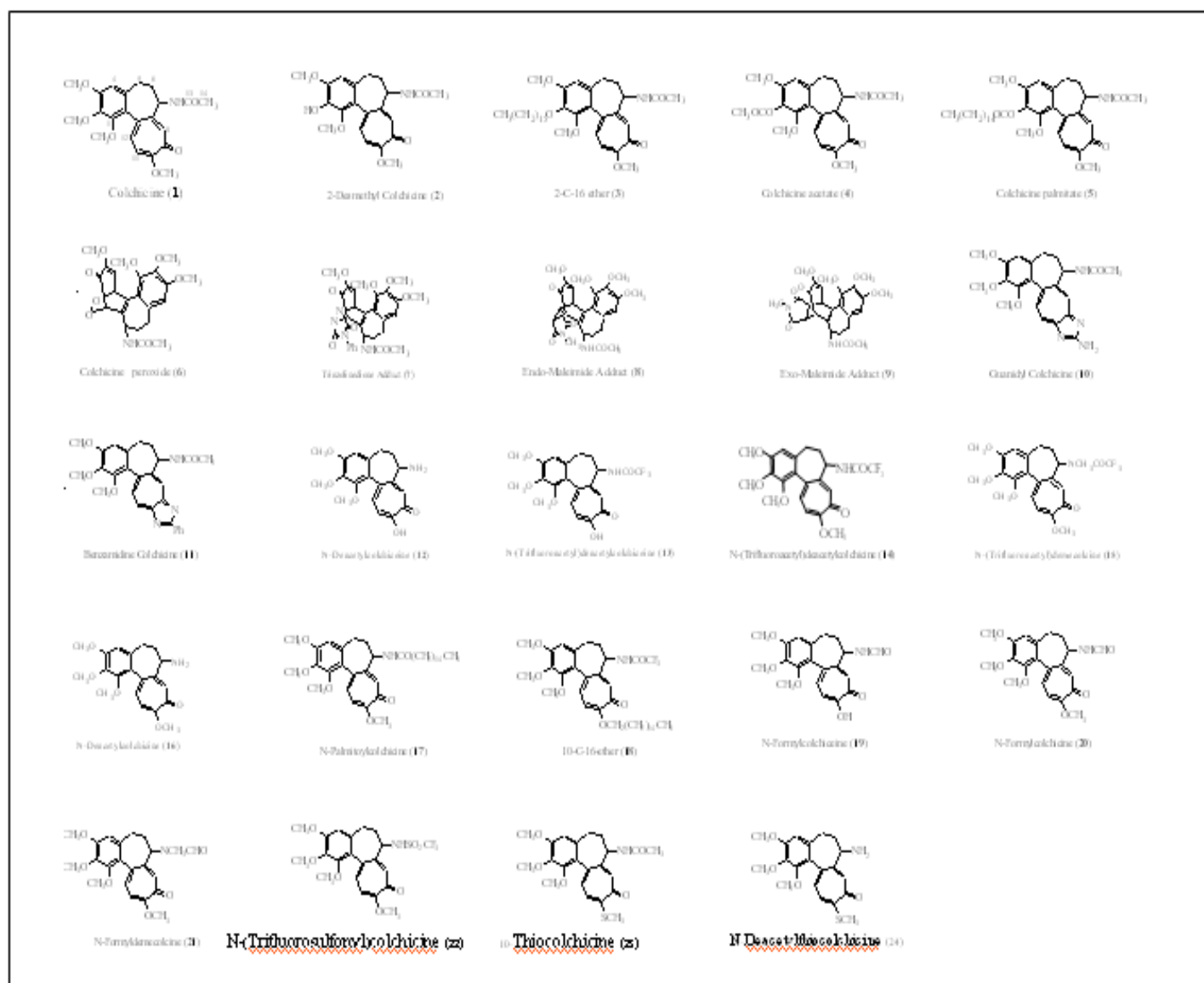


Figure 25. Structure of colchicine derivatives used for testing cytotoxic activities

Table 12: Cytotoxicity Tests (IC₅₀) of Colchicine and Colchicine derivatives

Compounds	IC ₅₀ (µg/ml)		
	MCF-7	HCC-S102	HepG2
Colchicine (1)	0.004	0.012	0.010
2-Desmethyl Colchicine (2)	0.173	0.240	0.275
2-C-16 ether (3)	6.90	15.5	14.5
Colchicine acetate (4)	0.150	0.335	0.245
Colchicine palmitate (5)	0.035	0.270	0.245
Colchicine peroxide (6)	0.037	0.031	0.018
Triazolinedione Adduct (7)	19.0	24.0	19.5
Endo-Maleimide Adduct (8)	16.8	22.5	15.0
Exo-Maleimide Adduct (9)	4.95	14.0	18.5
Guanidyl Colchicine (10)	14.1	34.0	14.9
Benzamidine Colchicine (11)	38.5	40.0	28.0
N-Deacetylcolchicine (12)	9.40	17.3	6.45
N-(Trifluoroacetyl) deacetylcolchicine (13)	4.20	10.7	4.65
N-(Trifluoroacetyl) deacetylcolchicine (14)	0.003	0.019	0.014
N-(Trifluoroacetyl) demecolcine (15)	0.025	0.026	0.023
N-Deacetylcolchicine (16)	0.031	0.063	0.042
N-Palmitoylcolchicine (17)	0.030	0.175	0.100
10-C-16-ether (18)	12.4	34.5	19.0
N-Formylcolchicine (19)	14.9	18.5	17.4
N-Formylcolchicine (20)	0.003	0.018	0.012
N-Formyldemecolcine (21)	0.018	0.102	0.064
N-(Trifluorosulfonyl)colchicine (22)	0.029	0.190	0.069
10-Thiocolchicine (23)	0.002	0.002	0.003
N-Deacetylthiocolchicine (24)	0.020	0.020	0.015

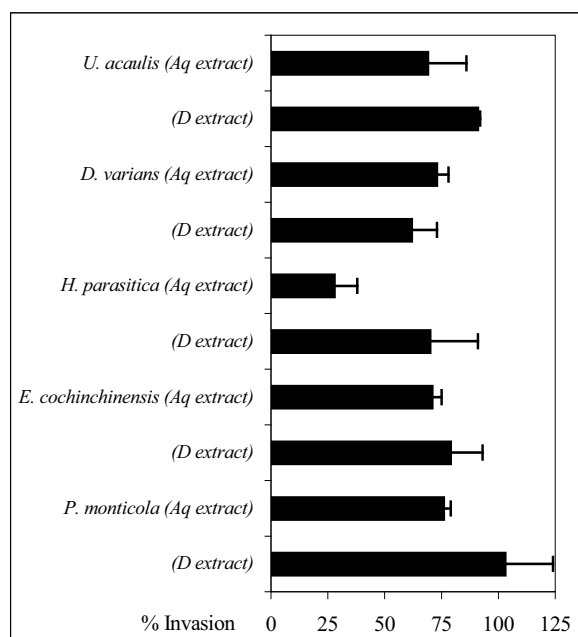


Figure 26: Anti-invasion activity of aqueous (Aq) and dichloromethane (D) extracts of several Thai herbs. All samples were assayed at 50 $\mu\text{g/ml}$. Data represent mean with S.E.M. for 3 experiments. Data are percent invasion compared to control.

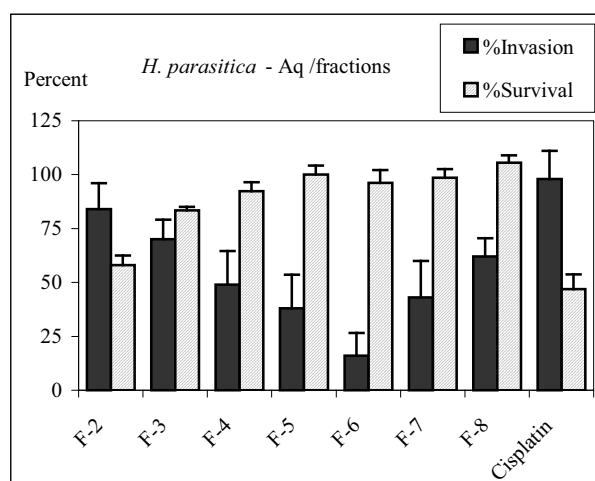


Figure 27: Anti-invasion and cytotoxic activity of partially purified fractions from an aqueous extract of *H. parasitica*. The fractions were assayed at 50 $\mu\text{g/ml}$, in comparison with cisplatin (10 $\mu\text{g/ml}$). Data represent mean with SD of an experiment, and are expressed as percent invasion and percent surviving cells compared to control.

The aqueous extract of *H. parasitica* also showed interesting antioxidant activity, IC₅₀ for radical scavenging was 4.80 µg/ml, compared to 2.25 and 3.04 µg/ml for well-known antioxidant compounds, caffeic acid and ascorbic acid respectively. Therefore antioxidant activity of the eluted fractions were determined with the following results: F-1 (24.85 µg/ml), F-2 (1.81 µg/ml), F-3 (2.88 µg/ml), F-4 (3.18 µg/ml), F-5 (3.95 µg/ml), F-6 (5.41 µg/ml), F-7 (7.48 µg/ml), and F-8 (25.26 µg/ml), respectively. The highest antioxidant activity was found in fraction (F-2), which had low anti-metastatic activity.

H. parasitica is an interesting plant, since its aqueous extract possesses both anti-metastatic and antioxidant activity. Unlike compounds of tea plants, which suppressed cancer cell invasion through antioxidant activity, our results indicate that the anti-metastatic activity of the aqueous extract of *H. parasitica* is not associated with the antioxidant activity, and resides in ingredients of the plant having low cytotoxicity. The active compound is being purified and will be further studied to elucidate its mechanism.

III. Publications in International Journals and Proceedings

a) Publications in International Journals

For journals listed in Science Citation Index, Impact Factors [JIF] of each journal are shown for the year 2003. Other journals are generally considered by Thai scientists as being “international journals”, published in Thailand, and as far as we know, fulfil the criteria set by the Thailand Research Fund. Overall, 22 papers were published in international journals. In addition two other articles were published in International Proceedings volumes.

1. *Svasti, J.* (2001) Bioscience and Its Impact on Developing Countries: a Thai Perspective. *EMBO Rep.* 2, 648-650. [JIF = 7.390]
2. *Chaiyen, P., Suadee, C., & Wilairat, P.* (2001) A Novel Two-Protein Component Flavoprotein Hydroxylase: *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*. *Eur J. Biochem* **268** (21), 5550-5561. [JIF = 3.001]
3. *Svasti, J., Srisomsap, C., Wasant, P., Pangkanon, S., Tiensuwan, M., Boonpuan, K., Sawangareetrakul, P. and Liammongkolkul, S.* (2001) Normal Plasma Free Amino Acid Levels in Thai Children. *J. Med. Assoc. Thailand.* **84**, 1558-1568. [JIF = -]
4. *Arthan, D., Svasti, J., Kittakoo, P., Pittayakhachonwut, D., Tanticharoen, M., and Thebtaranonth, Y.* (2002) Antiviral isoflavonoid sulfate and steroidal glycosides from the fruits of *Solanum torvum*. *Phytochemistry.* **59**, 459-463. [JIF = 1.889]
5. *Turbpaiboon, C., Svasti, S., Sawangareetrakul, P., Winichagoon, P., Srisomsap, C., Siritanaratkul, N., Wilairat, P., and Svasti, J.* (2002) Hb Siam [α 1-15(A13)Gly ($\underline{\text{C}}\text{GT}$) $\rightarrow$ Arg($\underline{\text{C}}\text{GT}$)] is a typical alpha hemoglobinopathy without alpha thalassemic effect. *Hemoglobin* **26**, 77-81. [JIF = 0.505]
6. *Sawangareetrakul, P., Svasti, S., Yodsowon, B., Winichagoon, P., Srisomsap, C., Svasti, J., and Fucharoen, S.* (2002) Double Heterozygosity for Hb Pyrgos [β 83(EF7)Gly $\rightarrow$ Asp] and Hb E [β 26(B8)Glu $\rightarrow$ Lys] Found in Association with α -Thalassemia. *Hemoglobin.* **26**, 191-196. [JIF = 0.505]
7. *Kumar, C. V, Buranaprapuk, A., Sze, H. C., Jockusch, S., Turro, N. J.* (2002) Chiral Protein Scissors: High Enantiomeric Selectivity for Binding and its Effect on Protein Photocleavage Efficiency and Specificity *Proc. Natl. Acad. Sci. USA.* **99**(9), 5810-5815. [JIF = 10.7]

Publications in Year 2

8. Srisomsap, C., Subhasitanont, P., Otto, A., Mueller, E.-C., Punyarit, P. Wittmann-Liebold, B. and Svasti, J. (2002) Detection of Cathepsin B Up-Regulation in Neoplastic Thyroid Tissues by Proteomic Analysis. *Proteomics*. **2**, 706-712. [JIF = 5.776]
9. Wasant, P., Svasti, J., Srisomsap, C., Liammongkolkul, S., and Ratanarak, P., (2002). Inherited Metabolic Disorders in Thailand. *J. Med. Assoc. Thailand* **85**, Suppl 2, S700-9. [JIF = -]
10. Wasant, P., Srisomsap, C., Liammongkolkul, S. and Svasti, J. (2002) Urea cycle disorders in Thai infants: a report of 5 cases. *J. Med. Assoc. Thailand* **85**, Suppl 2, S720-31. [JIF = -]
11. Kaomek, M., Mizuno, K., Fujimura, T., Sriyotha, P. and Ketudat Cairns, J.R. (2003) Cloning, Expression and Characterization of an Anti-Fungal Chitinase from *Leucaena leucocephala* de Wit. *Bioscience, Biotechnology and Biochemistry* **67**, 667-676. [JIF = 1.025]
12. Opassiri, R., Ketudat Cairns, J.R., Akiyama, T., Wara-Aswapati, O., Svasti, J. and Esen, A. (2003) Characterization of a rice β -glucosidase genes highly expressed in flower and germinating shoot. *Plant Science* **165**, 627-638. [JIF = 1.652]
13. Champattanachai, V., Ketudat Cairns, J.R., Shotelersuk, V., Keeratichamroen, S., Sawangareetrakul, P., Srisomsap, C., Kaewpaluak, V. and Svasti, J. (2003) Novel mutations in a Thai patient with methylmalonic acidemia. *Molecular Genetics and Metabolism* **79**, 300-302. [JIF = 2.038]
14. Kongsaree, P., Samanchart, C., Laowanapiban, P., Wiyakrutta, S. and Meevootisom, V. (2003) Crystallization and Preliminary X-ray Crystallographic Analysis of D-Phenylglycine Aminotransferase from *Pseudomonas stutzeri*. *Acta Crystallographica Section D*, **59**, 953-954. [JIF = 2.208]
15. Kongsaree, P., Prabpai, S., Sriubolmas, N., Longview, C. and Wiyakrutta, S. (2003) Antimalarial dihydroisocoumarins from endophytic fungus collected from *Crassocephalum crepidioides*. *Journal of Natural Products*, **66**, 709-711. [JIF = 1.849]

Publications in Year 3

16. Lirdprapamongkol, K., Chulabhorn, M., Thongnest, S., Prawat, H., Ruchirawat, S., Srisomsap, C., Surarit, R., Punyarit, P., and Svasti, J. (2003) Anti-metastatic effects of aqueous extract of *Helixanthera parasitica*. *J Ethnopharmacol* **86**, 253-6. [JIF = 1.188]

17. Ngiwsara, L., Srisomsap, C., Winichagoon P., Fucharoen S., and *Svasti, J.* (2003) Hb Kodaira II [β 146 (HC3) His-Gln] detected in Thailand. *Hemoglobin*. **27**, 37-39. [JIF = 0.505]
18. Opassiri, R., Hua, Y., Wara-Aswapati, O., Akiyama, T., *Svasti, J.*, Esen A., and Ketudat Cairns J.R.. (2004) β -Glucosidase, exo- β -glucanase and pyridoxine transglucosylase activities of rice BGlu1. *Biochemical Journal* **379**, 125-131. [JIF = 4.101]
19. Ngiwsara, L., Srisomsap, C., Winichagoon, P., Fucharoen, S. and *Svasti, J.* (2004) Two Cases of Compound Heterozygosity for Hemoglobin Hekinan [α (27); Glu-Asp] and α -Thalassemia in Thailand. *Hemoglobin*. **28**, 145-150. [JIF = 0.505]
20. Srisomsap, C., Sawangareetrakul, P., Subhasitanont, P., Panichakul., Keeratichamroen, S., Lirdprapamongkol, K., Chokchaichamnankit, D., Sirisinha, S and *Svasti, J.* (2004) Proteomic Analysis of Cholangiocarcinoma Cell Line. *Proteomics*, **4**, 1135-1144. [JIF = 5.776]
21. *Chaiyen, P.*, Sucharitakul, J., *Svasti, J.*, Entsch, B., Massey, V. and Ballou, D.P. (2004) Use of 8-Substituted-FAD Analogs to Investigate the Hydroxylation Mechanism of the Flavoprotein 2-Methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase. *Biochemistry*. **43**, 3933-3943. [JIF = 3.922]
22. *Suginta, W.*, Vongsuwan, A., Songsiriritthigul, C., Prinz, H., Estibeiro, P., Duncan, R.R., *Svasti, J.*, and Fothergill-Gilmore, L.A. (2004) An endochitinase A from *Vibrio carchariae*: cloning, expression, mass and sequence analyses, and chitin hydrolysis. *Arch. Biochem. Biophys* **424**, 171-180. [JIF = 2.338]

b) International Proceedings

23. *Chaiyen, P.*, Suadee, C., Thotsaporn, K. & *Svasti, M.R. J.* (2002) Studies of the Two-Component *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*, in *Flavins & Flavoproteins*, (Eds: Chapman, S., Perham, R., and Scrutton, N.), Rudolf Weber, Berlin, 975-980.
24. Sucharitakul, J., *Chaiyen, P.*, Ballou, D. P., & Massey, V. (2002) Probing the Mechanism of 2-Methyl-3-Hydroxypyridine-5-Carboxylic Acid Oxygenase by Using 8-Substituted-FAD Analogs, in *Flavins & Flavoproteins*, (Eds : Chapman, S., Perham, R., and Scrutton, N.), Rudolf Weber, Berlin, 381-386.

IV. Abstracts in National and International Meetings and Other Presentations of Research Results

a) Presentations at International Meetings

International Meetings Year 1

1. Ketudat Cairns, J.R., Champattanachai, V., Chuankhayan, P., Srisomsap, C., Boonpuan, K., Sullivan, P.A., & Svasti, J. 2001. *Dalbergia* beta-glucosidases: structural and functional differences. Fifteenth Symposium of the Protein Society, Philadelphia, PA, USA 29 July-1 August, 2001, *Protein Science* **10** (Suppl. 2): 94-95 (#163).
2. Srisomsap, C., Subhasitanont, P., Otto, A., Mueller, E.-C., Punyarit, P., Wittmann-Liebold, B. and Svasti, J. Comparative Proteomic Analysis of Non-neoplastic and Neoplastic Thyroid Tissues. *Applied Proteomics Conference: in view of 40 years of protein analysis*, Potsdam, Germany, 26-27 May 2001.
3. Svasti, J. (2001) Building Infrastructure for Molecular Biology and Biotechnology: a Thai perspective. Invited Lecture, *Strategy Meeting to Establish Southeast Asian Molecular Biology Research Training Program*, Gold Coast, Australia, 1-2 September, 2001.
4. Wasant, P., Svasti, J., Srisomsap, C., Liammongkolkul, S. and Ratanarak, P. (2001) The Genetic Metabolic Project at Siriraj Hospital, Bangkok, Thailand. *4th Asia-Pacific Regional Meeting on Newborn Screening of the International Society on Neonatal Screen*, Manila, Philippines, 17-19 October 2001.
5. Chaiben, P., Suadee, C., Thotsaporn, K. & Svasti, M.R. J. (2002) Studies of the Two-Component *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*, in 14th International Symposium in Flavins & Flavoproteins, Cambridge, UK.
6. Sucharitakul, J., Chaiben, P., Ballou, D. P., & Massey, V. (2002) Probing the Mechanism of 2-Methyl-3-Hydroxypyridine-5-Carboxylic Acid Oxygenase by Using 8-Substituted-FAD Analogs, in 14th International Symposium in Flavins & Flavoproteins, Cambridge, UK.

International Meetings Year 2

1. Svasti, J. (2002) Production of Ph.D. Graduates at Thai Universities. Invited Lecture, *16th Federation of Asian and Oceanian Biochemists and Molecular Biologists Symposium*, Taipei, Taiwan, 20-22 September 2002.
2. Toonkool, P., Jensen, S.A., Maxwell, A.L. and Weiss, A.S. (2002) Hydrophobic domains of human tropoelastin interact in a context-dependent manner (poster and oral presentation). 16th Federation of Asian and Oceanian Biochemists and Molecular Biologists Symposium. P079. Taipei, Taiwan, 20-22 September 2003.
3. Sawangareetrakul, P., Srisomsap, C., Wasant, P., Liammongkolkul, S. and Svasti, J. (2002) Detection of homocystinuria in Thai children by HPLC. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.

4. Champattanachai, V., Keeratichamroen, S., Sawangareetrakul, P., Ketudat-Cairns J.R., Srisomsap, C., Shotelersuk, V. and Svasti, M.R.J. (2002) Identification of two novel mutations in the methylmalonyl Co-A mutase from a Thai patient with acidemia. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
5. Ngiwsara, L., Srisomsap, C., Fucharoen, P., Fucharoen, S., Ketudat-Cairns, J.R. and Svasti, M.R.J. (2002) Characterization of hemoglobin Hekinan [α 27Glu(GAG) $\rightarrow$ Asp(GAT)] in Thailand. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
6. Jintaridth, P., Kalpravidh, R., Srisomsap, C., Fucharoen, P., Fucharoen, S. and Svasti, M.R.J. (2002) Purification of human embryonic zeta globin chain for antibody production. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
7. Lirdprapamongkol, K., Thongnest, S., Prawat, H., Ruchirawat, S., Srisomsap, C., Surarit, R. and Svasti, J. (2002) The search for anti-metastatic agents from Thai herbs. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
8. Subhasitanont, P., Keeratichamroen, S., Srisomsap, C., Champattanachai, V. and Svasti, J. (2002) Proteomic analysis of apoptosis induced by colchicine in human hepatoblastoma. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
9. Srisomsap, C., Subhasitanont, P., Punyarit, P. and Svasti, J. (2002) Proteomic alteration in thyroid diseases. *4th HUGO Pacific Meeting & 5th Asia-Pacific Conference on Human Genetics*, Pattaya, Thailand, 27-30 October 2002.
10. Svasti, J. (2002) Hydrolysis, Reverse Hydrolysis, and Transglucosylation Reactions of β -Glucosidase Enzymes from Thai Plants. Oral Presentation, *5th Conference of the Asia-Pacific International Molecular Biology Network (AIMBN)*, Shanghai, China, 2-4 November 2002.
11. Srisomsap, C., Subhasitanont, P., Panichakul, T., Lirdprapamongkol, K., Keeratichamroen, S., Sawangareetrakul, P., Chokchaichamnankit, D., Jai-nhuknan, J., Sirisinha, S. and Svasti, J. (2002) Proteomic map of the human cholangiocarcinoma cell line. *HUPO First World Congress*, Versailles, France, 21-24 November 2002.
12. Svasti, J., Srisomsap, C., Subhasitanont, P. and Punyarit, P. (2002) Protein changes in thyroid diseases. *HUPO First World Congress*, Versailles, France, 21-24 November 2002.
13. Opassiri R, Ketudat-Cairns JR, Wara-Aswapati O, Akiyama T, Svasti J, and Esen A. Structure and expression of β -glucosidase genes in rice (*Oryza sativa* L.). *Plant Biology 2002. The Annual Meeting of the American Society of Plant Biologists*, Denver CO, USA Aug 3-7, 2002. Abstracts pg 45 Session 27 # 62.

14. Svasti, J., Srisomsap, C., Surarit, R., Ketudat-Cairns, J., Techasakul, S. and Toonkool, P. (2003) Structure and properties of Thai plant β -glucosidases. Invited Lecture, 7th *International Symposium on Protein Structure Function Relationship*, Karachi, Pakistan, 20-24 January 2003.
15. Toonkool, P., Ketudat-Cairns, J. and Svasti, J. (2003) Protein engineering of β -glucosidase from Thai plants. 7th *International Symposium on Protein Structure Function Relationship*, Karachi, Pakistan, 20-24 January 2003.

International meetings, Year 3

1. Srisomsap, C., Subhasitanont, P., Keratichamroen, S., Chimnoi, N., Chokchaichamnankit, D., Pisutjaroenpong, S., Svasti, J. (2003). Proteomic Analysis of *Hedychium coronarium* Induced Protein Alterations in Hepatocellular Carcinoma Cells. *Molecular and Cellular Proteomics* **2**, 836.
2. Toonkool, P., Ketudat-Cairns, J. and Svasti, J. (2003) Structure, Function and Engineering of β -Glucosidases from Thai Plants. Sixth Conference of the Asia-Pacific International Molecular Biology Network "Dramatic Advances in Life Science: Now to the Future". Tokyo, Japan, 11-13 November 2003.
3. Svasti, J. (2003) Thailand and the Life Science Highway. Invited Lecture, Sixth Conference of the Asia-Pacific International Molecular Biology Network "Dramatic Advances in Life Science: Now to the Future". Tokyo, Japan, 11-13 November 2003.
4. Yuvaniyama, J. (2004) *Plasmodium falciparum* DHFR-TS Structures Open Ways for New Anti-malarial Drug Design. Prince Mahidol Award International Symposium on Medicine and Public Health, 27 January 2004, Faculty of Science, Mahidol University.
5. Kongsaree, P. (2004) X-ray crystal structure of dihydrofolate reductase from *Plasmodium vivax*: antifolate resistance mechanism" Prince Mahidol Award International Symposium on Medicine and Public Health, 27 January 2004, Faculty of Science, Mahidol University.
6. Kongsaree, P., Khongsuk, P., Leartsakulpanich, U., Chitnumsub, P., Yuthavong, Y. (2004). X-ray crystal structure of dihydrofolate reductase from *Plasmodium vivax*: antifolate resistance mechanism. Asian Crystallographic Association Conference, 27-30 June, 2004. Hong Kong, China.

b) Presentations at National Meetings

National Meetings, Year 1

1. Arthan, D. Kittakoop, P., Svasti, M.R. J. (2001) Natural Substrates of β -Glucosidase from *Solanum Torvum* Sw. 27th *Annual Congress on Science and Technology of Thailand*, Haadyai, 16-18 October 2001.
2. Ngiswara, L., Wasant, P., and Svasti, M.R. J. (2001) Determination of The Normal Level of Some Mucopolysaccharide Degrading Enzyme in Human Leukocyte. 27th *Annual Congress on Science and Technology of Thailand*, Haadyai, 16-18 October 2001.
3. Sawangareetrakul P., Srisomsap, C., Fucharoen, P. Fucharoen, F. and Svasti, M.R. J. (2001) Characterization of Hemoglobin Pyrgos/Hemoglobin E And α -Thalassemia 1

Trait in Thailand. 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.

4. Turbpaiboon, C., Svasti, S. Winichagoon, P., Siritanaratkul, N., Svasti, J. and Wilairat, P. (2001) Identification of Hemoglobin Siam [α 1-15(A13)Gly(Ggt)-Arg(Cgt)] in a Family of Thai Origin. 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.
5. Ketudat Cairns, J.R., Opassiri, R., Esen, A., Akiyama, T. & Svasti, J. 2001. Rice β -glucosidase genomics, identification and characterization. *BioThailand 2001 & National Rice Congress*. 7-10 Nov., 2001. Queen Sirikit National Convention Center, Bangkok. Abstract O-Rice-02 Abstracts pg. 47.
6. Chantarangsee, M., Mizuno, K., Fujimura, T. & Ketudat-Cairns, J.R. 2001. Cloning and expression of β -galactosidase from rice (*Oryza sativa* L.). *BioThailand 2001 & National Rice Congress*. 7-10 Nov., 2001. Queen Sirikit National Convention Center, Bangkok. Abstract P-Rice-17 Abstracts pg. 261.
7. Kaomek, M., Sriyotha, P., Fujimura, T. Ketudat-Cairns, J.R.. 2001. Recombinant expression and purification of class I chitinases from *Leucaena leucocephala* de Wit in *E. coli*. 27th Congress on Science and Technology of Thailand, Haadyai, Songkla 16-18 October, 2001. Extended Abstracts 17-16P-64 pg. 564.
8. Opassiri, R., Ketudat-Cairns, J., Wara-Aspanti, O., Esen A., Akiyama, T., and Svasti, J. 2001. Expression of rice beta-glucosidases. 27th Congress on Science and Technology of Thailand, Haadyai, Songkla 16-18 October, 2001. Extended Abstracts 17-16P-29, pg. 529.
9. Suadee, C. and Chaiyen, P. (2001) Investigation on Catalytic Properties of a Novel Two-Component: p-hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*. 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.
10. Sucharitakul, J. and Chaiyen, P. (2001) Probing Hydroxylation Mechanism of 2-Methyl-3-Hydroxypyridine-5-Carboxylic Acid Oxygenase. (2001) 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.
11. Thotsaporn, K. and Chaiyen, P. (2001) Redox Potential and Substrate Binding of Reductase Component of p-Hydroxyphenylacetate Hydroxylase (2001) 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001, p 563.
12. Rojviriya, C. and Yuvaniyama, J. (2001) Conversion of Bacterial Penicillin G Acylase to Cephalosporin C Acylase by Protein Engineering, 27th Congress on Science and Technology of Thailand, Haadyai, Thailand, 16–18 October 2001.
13. Khongsook, P., Leartsakulpanich, U., and Kongsaree, P. (2001) Purification of histidine-tagged dihydrofolate reductase from *Plasmodium vivax* with Ni-NTA affinity column for protein crystallization. (2001) 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.
14. Kongsaree, P., Laowanapiban, P., Meevootisom, V, Samanchat, C. and Wiyakrutta, S. (2001) Crystallization and preliminary X-ray crystallographic analysis of D-phenylglycine aminotransferase from *Pseudomonas stutzeri* ST201. (2001) 27th Annual Congress on Science and Technology of Thailand, Haadyai, 16-18 October 2001.

15. Vongvien, C. and Kongsaree, P. (2001) Bioactive Compounds from an Endophytic fungus isolated from *Shorea obtusa* Wall. (2001) *27th Annual Congress on Science and Technology of Thailand*, Haadyai, 16-18 October 2001.
16. Dokprom, U., Leartsakulpanich, U., and Kongsaree, P. (2001) Effects of the numbers of short tandem repetitive sequences GGDN of kinetic property of dihydrofolate reductase (DHFR) from *Plasmodium vivax*. (2001) *27th Annual Congress on Science and Technology of Thailand*, Haadyai, 16-18 October 2001.

National Meetings, Year 2

1. Svasti, M.R. J. (2002) Research on Protein Structure and Function. Invited Lecture, *28th Annual Congress on Science and Technology of Thailand*, Bangkok, 24-26 October 2002.
2. Buranaprapuk, A. and Kumar, C. V. (2002) Site Specific Cleavage of Proteins Activated with Light. *28th Annual Congress on Science and Technology of Thailand*, Queen Sirikit National Convention Center, Bangkok, 24-26 October 2002.
3. Buranaprapuk (Chaivisuthangkura), A., Ratananukul, P., Chanunpanich, N., Pinsem, W. and Fungtammasan, B. (2002) Analysis of Biodiesel produced from Palm Stearin Oil using HPLC Technique. Oral presentation, *28th Annual Congress on Science and Technology of Thailand*, Queen Sirikit National Convention Center, Bangkok, 24-26 October 2002.
4. Boonclarm, D. and Svasti, M.R. Jisnuson (2002) Screening of Thai Plants for Natural β -Glucosides and β -Glucosidase Enzyme, *28th Annual Congress on Science and Technology of Thailand*, Bangkok, 24-26 October 2002.
5. Phongsak, T. and Svasti, M.R.J. (2002) Comparison of Reaction Conditions For Transglycosylation of Alcohols by Cassava Linamarase, *28th Annual Congress on Science and Technology of Thailand*, Bangkok, 24-26 October 2002.
6. Srisomsap, C., Subhasitanont, Lirdprapamongkol, K., and Svasti, M.R.J. (2002) Proteomics of Thai hepatocellular carcinoma. Oral Presentation, *28th Annual Congress on Science and Technology of Thailand*, Bangkok, Thailand, 24-26 October 2002.
7. Pilaiwan Siripurkpong, Jirundon Yuvaniyama, and Prapon Wilairat (2002) Study of Active-Site Specificity of *Plasmodium falciparum* Plasmepsins, *28th Annual Congress on Science and Technology of Thailand*, Bangkok, 24-26 October 2002.
8. Ngiwsara, L., Srisomsap, C., Fucharoen, P., Fucharoen, S., Sawangareetrakul, P., Ketudat-Cairns, J.R. and Svasti, M.R.J. (2002) Hemoglobin Kodaira [β 146 (HC3) His $\rightarrow$ Gln], a high oxygen affinity, observed in Thailand. *28th Annual Congress on Science and Technology of Thailand*, Bangkok, Thailand, 24-26 October 2002.
9. Jintaridith, P., Kalpravidh, R., Srisomsap, C., Fucharoen, P., Fucharoen, S. and Svasti, M.R.J. (2002) Isolation of human embryonic zeta globin chain from blood of hydrops fetalis. *28th Annual Congress on Science and Technology of Thailand*, Bangkok, Thailand, 24-26 October 2002.
10. Ketudat Cairns JR, Opasiri R, Chantarangsee M, Chuenchor W, Akiyama T, Esen J, Svasti J, Wara-Aswapati O. 2003. Investigation of Glycosyl Hydrolase Family 1 and 35 Genes in Rice. *Rice Biotechnology 2003/ BioThailand 2003*. PEACH Pattaya, Thailand, July 18, 2003. O-RICE-02. Proceedings pgs. 23-28.

11. Opassiri R., Ketudat Cairns JR, Akiyama T, Wara-Aswapati O, Svasti J, Esen A. 2003. cDNA cloning, recombinant protein expression, and functional characterization of a rice β -glucosidase highly expressed in flower and germinating shoot. Rice Biotechnology 2003/ BioThailand 2003. PEACH Pattaya, Thailand, July 18, 2003. P-RICE-09, Proceedings pg. 81.
12. Opassiri R., Ketudat-Cairns JR, Wara-Aswapati O, Akiyama T, Svasti J, Esen A. 2002. Structure and expression of β -glucosidase genes in rice. 14th Annual Meeting of the Thai Society for Biotechnology. Khonkaen Thailand, Nov. 12-15, 2002. Abstract P-EP17
13. Kaomek M, Sriyotha P, Mizuno K, Fujimura T, Ketudat Cairns JR. 2002. Kinetic and anti-fungal characterization of class I chitinase from *Leucaena leucocephala* de Wit. 28th Congress on Science and Technology of Thailand. Bangkok, Thailand October 24-26, 2002. Abstract 07-28-P, Extended Abstracts pg. 334.
14. Chuankhayan P., Ketudat Cairns JR, Svasti J. 2002. Structural and functional characterization of β -glucosidase enzyme from *Dalbergia nigrescens* seeds. 28th Congress on Science and Technology of Thailand. Bangkok, Thailand October 24-26, 2002. Abstract 07-34-P, Extended Abstracts pg. 340.
15. Supakorndej, T. and Wongsangchantra, P. Y. (2002) Screening for protease hydrolyzing silk sericin but not silk fibroin. *Protein Research Network Symposium 2002 on Protein Structure and Molecular Enzymology*, Center for Protein Structure and Function, Faculty of Science, Mahidol University, 29-30 August 2002.
15. Wongvithoonyaporn, P., Mahaut, W., Artharn, D., Pao-in, T., Leongthongaram, J., and Svasti, J. (2002) Purification and Characterization of α -Mannosidase from Roselle. In *Abstracts of the 14th Annual Meeting of the Thai Society for Biotechnology on Biotechnology for Better Living in the New economy*. Sofitel Raja Orchid Hotel, Khonkaen, Thailand, 12-15 November, 2002. p. 180.

National Meetings, Year 3

1. Kongsaree, P. (2003) X-ray crystal structure of dihydrofolate reductase from *Plasmodium vivax*". The Postgraduate Education and Research in Chemistry Conference II, 12-14 May, 2003. Pattaya, Chonburi.
2. Subhasitanont, P., Srisomsap, C., Chokchaichamnankit, D and Svasti, J. (2003) Enrichment and Proteome Analysis of cathepsin B from thyroid papillary carcinoma. 29th Congress on Science and Technology of Thailand, Khonkaen, 20-22 October 2003.
3. Keeratichamroen, S., Sawangareetrakul, P., Ketudat-Cairns J.R., Srisomsap, C., Champattanachai, V., Surarit, R., Wasant, P. and Svasti, M.R. J. (2003). Identification of a novel *cbI/B* mutation from Thai patients with methylmalonic acidemia. 29th Annual Congress on Science and Technology of Thailand, Khonkaen, 20-22 October 2003.
4. Keeratichamroen, S., Ngisara, L., Lirdprapamongkol, K., Ketudat-Cairns J.R., Srisomsap, C., Surarit, R., Wasant, P. and Svasti, M.R. J. (2003). Identification of 2 novel mutations in a Thai patient with mucopolysaccharidosis type I. 29th Annual Congress on Science and Technology of Thailand, Khonkaen, 20-22 October 2003.

5. Boonclarm, D. and Svasti, M.R.J. (2003) Study of Novel β -Glucosidases In Thai Plants. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
6. Hommalai, G. and Svasti, M.R.J. (2003) Effect of alcohols on transglucosylation specificity of plant β -glucosidases for alkyl glucoside synthesis. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
7. Phongksak, T. and Svasti, M.R.J. (2003) Synthesis of tertiary alkyl- β -glycosides using cassava linamarase. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
8. Sarntima, R. And Svasti, M.R.J (2003) Plant β -Glucosidases: Study Of Substrate Specificity In Transglycosylation Of Long Chain Alcohols. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
9. Yuvaniyama, J. (2003) X-ray Crystallography, Drug Design, and Protein Engineering. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
10. Yuvaniyama, J., Chitnumsub, P., Kamchonwongpaisan, S., Vanichtanankul, J., Sirawaraporn, W., Taylor, P., Walkinshaw, M.D. and Yuthavong, Y. (2003) Structures of *Plasmodium falciparum* Dihydrofolate Reductase - Thymidilate Synthase: Another Step to Combat Malaria. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
11. Rojviriyaya, C. and Yuvaniyama, J. (2003) Crystallization and Structure Determination of Penicillin-G Acylase from *Bacillus megaterium* Uncat. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
12. Oonant, W., Yuvaniyama, J., and Chaiyen, P. (2003) Crystallization of 2-methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase from Soil Bacterium *Pseudomonas sp.* MA-1. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
13. Pengthaisong, S. and Yuvaniyama, J. (2003) Solubility Improvement of *Plasmodium falciparum* Plasmepsin I by Protein Engineering. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
14. Duangrudee Tanramluk, Penchit Chitnumsub, and Jirundon Yuvaniyama (2003) Crystal Structure of Trimethoprim - *Plasmodium falciparum* Dihydrofolate Reductase – Thymidilate Synthase Complex. *29th Annual Congress on Science and Technology of Thailand*, Khonkaen, 20-22 October 2003.
15. Kongsaree, P. “Structural X-ray Crystallographic Investigation in Chemistry and Biology Research: from bioactive compounds to cellular targets”. *29th Conference of Science and Technology of Thailand (STT29)*, Khonkaen, 20 - 22 October 2003.
16. Opasiri, R. and Ketudat Cairns, J.R. (2004) Exo-beta-glucanase and transglycosylase activities of rice BGlu1 beta-glucosidase. (oral presentation) 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p. 27

17. Chantarangsee, M. and Ketudat Cairns, J.R. (2004) Molecular cloning and expression of rice β -galactosidase in *E.coli* BL21(DE3). (poster presentation) 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p.80
18. Metheenukul, P., Ketudat-Cairns, J.R., and Fujimura, T. (2004) Recombinant expression of Thai rosewood β -glucosidase in *E. coli*. 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p.85
19. Chuenchor, W., Opassiri, R., Ketudat Cairns, J.R. (2004) Recombinant expression and preliminary crystallization of rice BGlu1 beta-glucosidase. 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p. 98
20. Mothong, N., Chuankhayan, P., Toonkool, P., and Ketudat Cairns, J.R.. (2004) Cloning and sequencing of a full-length cDNA encoding a new β -glucosidase from *Dalbergia nigrescens* Kurz. 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p. 68
21. Chuankhayan, P., Ketudat-Cairns, J., and Hua, Y. (2004) The purification of isoflavonoid glycoside substrates from *Dalbergia nigrescens* Kurz. 15th Annual Meeting of the Thai Society for Biotechnology, Chiang Mai, Thailand, 2-6 February, 2004. Abstracts p.70
22. Songsiriritthigul C., Robinson R.C., Yuvaniyama J., and Suginta, W. (2004) Expression, purification and preliminary structural analysis of chitinase a from *Vibrio carchariae*. 15th Annual Meeting of the Thai Society for Biotechnology. Chiangmai, Thailand February 3-6, 2004. Abstract p. 164.

c) International Data base Entries

1. Opassiri, R., Ketudat Cairns, J.R., Vichitphan, S. and Esen, A. (2001) *Oryza sativa* beta-glucosidase isozyme 2 precursor, mRNA, complete cds. Genbank Accession: AY056828.
2. Chantarangsee M, Mizuno K, Fujimura T, Ketudat Cairns J. (2002) *Oryza sativa* (japonica cultivar-group) beta-galactosidase mRNA, complete cds. Genbank accession: AF508799
3. Esen A., Opassiri R, Ketudat Cairns JR. (2002) *Oryza sativa* beta-glucosidase mRNA, complete cds. Genbank accession: U28047
4. Akiyama,T., Opassiri,R., Ketudat-Cairns,J.R., Svasti,J. and Esen,A. (2002) *Oryza sativa* (japonica cultivar-group) beta-glucosidase mRNA AY129294

V. Students Completing or Undertaking Training

a) Ph.D. Students Graduated

1. Miss Pilaiwan Siripurkpong, Ph.D. Biochemistry, March 2003, Mahidol University. Thesis title: Study of active-site specificity of *Plasmodium falciparum* plasmepsins.
2. Mr. Dumrongkiet Arthan, Ph.D., Biochemistry, Mahidol University, July 2003, Research area: *Solanum torvum* glycoside and its β -glucosidase enzyme
3. Miss Rodjana Opassiri, Ph.D. Environmental Biology, August 2003, Suranaree University of Technology. Thesis Title: Characterization of Rice β -Glucosidase.
4. Miss Jaruwan Siritapetawee, Ph.D, Biochemistry, Suranaree University of Technology, May 2004; Thesis title: Functional and structural properties of an outer membrane protein in *Burkholderia pseudomallei* by comparison with *Burkholderia thailandensis*.

b) M.S. Students Graduated

1. Miss Mallika Chantarangsee, M.Sc. Biotechnology, August 2001, Suranaree University of Technology. Thesis title: Cloning and expression of β -galactosidases from rice (*Oryza sativa* L.).
2. Miss Jariya Tontivatereungdej, M.Sc. Biochemistry, November 2002, Mahidol University. Thesis title: Improvement of Crystallizability of *Plasmodium falciparum* Plasmepsin II Complexes.
3. Miss Cattleya Rojviriya, M.Sc. Biochemistry, April 2003, Mahidol University, Thesis title: Conversion of Bacterial Penicillin-G Acylase to Cephalosporin-C Acylase by Protein Engineering.
4. Mr. Thanawat Phongsak, M.Sc. Biochemistry, April 2003, Mahidol University, Thesis title: Transglucosylation of alcohols by β -glucosidases from Thai plants
5. Miss Lukana, Ngisara, M.Sc. Biochemistry, April 2003, Mahidol University, Research area: Structure of Abnormal Hemoglobins Found in Thailand.
6. Miss Duangkamol Boonclarm M.Sc. Biochemistry, Mahidol University, December 2003. Thesis title: Detection of novel glucosides and β -glucosidases from Thai plants
7. Mr. Man Theerasilp, M.Sc. Chemistry, May, 2003, Mahidol University. Thesis title: Determination of binding constant for intermediate complexation of dihydroartemisinin to ferroprotoporphyrin IX in physiological conditions by continuous variation method.
8. Mr. Puttapol Khongsuk, M.Sc. Chemistry, January, 2004, Mahidol University. Thesis title: Crystallization and Preliminary x-ray crystallographic analysis of *Plasmodium vivax* dihydrofolate reductase.
9. Mr. Kittisak Thotsaporn, M.Sc, Biochemistry, Mahidol University, November 2003; Research area: Cloning and Expression of oxygenase component of *p*-Hydroxyphenylacetate Hydroxylase.

c) Ph.D. Students Currently Undertaking Training

1. Miss Rakrudee Sarntima, Ph.D. study, Biochemistry, Mahidol University; Research area: Plant β -glucosidases: study of their specificity in glycoside synthesis and structure
2. Mr. Greanggrai Hommalai, Ph.D. study, Biochemistry, Mahidol University, Research area: Structure and function relationships in Thai plant β -glucosidases.
3. Miss Chutintorn Suadee, Ph.D. study, Biochemistry, Mahidol University; Research area: Study of Luciferase Enzymes from Marine Organisms.
4. Mr. Jeerus Sucharitakul, Ph.D. study, Biochemistry, Mahidol University; Research area: Mechanistic study of *p*-Hydroxyphenylacetate Hydroxylase.
5. Miss Phimonphan Chuankhayon, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: *Dalbergia nigrescens* β -glucosidase.
6. Miss Pornphimon Metheenukul, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: *Dalbergia cochinchinensis* β -glucosidase.
7. Miss Mallika Chantarangsee, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: Rice β -galactosidases.
8. Mrs Chompunuch Songsiriritthikul, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: Project title "Functional and structural characterisation of *V. carchariae* chitinase A expressed in an *E. coli* system"
9. Miss Chariwat Samanchart, M.Sc. study, Chemistry, Mahidol University, Research area: X-ray crystallographic analysis of *Pseudomonas stutzeri* D-phenylglycine aminotransferase
11. Miss Watchalee Cheunchor, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: Structure and function of rice β -glucosidase.
12. Mr. Sarayut Nidvipakul, Ph.D. study, Biochemistry, Mahidol University; Research area: Study of flavin reductase enzymes from Marine Organisms.
13. Miss Cattleya Rojviriya, Ph.D. study, Biochemistry, Mahidol University, Research area: X-ray Structure Determination and Protein Engineering of *Bacillus megaterium* Penicillin-G Acylase.
14. Miss Preeyachan Laourthai, Ph.D. study, Biochemistry, Mahidol University, Research area: Compounds Stimulating Hb F Synthesis.
15. Mr. Theerachai Kuntothom, Ph.D. study, Biochemistry, Suranaree University of Technology, Research area: Structure and function of rice beta-glucosidases.
16. Mr. Puttapol Khongsuk, Ph.D. Chemistry, Mahidol University. Area: X-ray crystallographic analysis of *Plasmodium vivax* dihydrofolate reductase

d) M.Sc. Students Undertaking Training

1. Miss Anothai Suphanpong, M.Sc. study, Organic Chemistry, Mahidol University, X-ray crystallographic study of *Plasmodium vivax* dihydrofolate reductase and isopropylmalate synthase

2. Miss Wijittra Mahaut, M.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Relationship between N-glycan and specificity of α -mannosidase from *Hibiscus sabdariffa* L.
3. Miss Duangkamol Senatham, M.Sc. study, Biotechnology, Mahidol University, Research area: Screening for sericin-specific protease from microorganisms using substrate adsorbed to a plastic surface and radial diffusion in gel.
4. Miss Thanaporn Supakorndej, M.Sc. study, Biotechnology, Mahidol University, Research area: Screening for sericin-specific protease from microorganisms
5. Miss Chantima Kaeyanon, M.Sc. study, Biotechnology, Mahidol University, Research area: Selection and isolation of a protease preferentially degrading sericin and improvement of its production using UV mutagenesis.
6. Mr. Worapoj Oonant, M.Sc. study, Biochemistry, Mahidol University, Research area: Crystallization of *Pseudomonas* MA-1 2-Methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase.
7. Miss Duangrudee Tarnramluk, M.Sc. study, Biochemistry, Mahidol University, Research area: X-ray Structure Determination of *Plasmodium falciparum* Dihydrofolate Reductase–Thymidylate Synthase Complexed with Trimethoprim Derivatives.
8. Miss Supreeya Cheewarat, M.Sc. study, Organic Chemistry, Mahidol University, Bioactive secondary metabolites from endophytic fungi from Thai medicinal plants.
9. Mr. Samran Prabpai, M.Sc. study, Organic Chemistry, Mahidol University, Crystallographic investigation of bioactive compound, Bioactive secondary metabolites from endophytic fungi. Biocatalysts in organic synthetic reactions.
10. Miss Kornkamon Kalapakornchai, M.Sc. study, Organic Chemistry, Mahidol University, β -glucosidase in organic synthesis.
11. Miss Wijittra Mahaut, M.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Relationship between N-glycan and specificity of α -mannosidase from *Hibiscus sabdariffa* L. var. *sabdariffa*
12. Miss Chutima Wongpaisal, M.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Sequence homology between fungal α -mannosidase I and II.
13. Miss Kanokpan Thammawattra. M.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Optimization of fungal naringinase production.
14. Miss Penporn Sujiwattanasat, M.Sc. study, Genetic Engineering, Kasetsart University, Research area: Site-directed mutagenesis in beta-glucosidase.
15. Mr. Kittipat Sopitdhammakun, M.Sc. study, Biochemistry, Mahidol University, Research area: Cloning and expression of serine hydroxymethyl transferase from *Plasmodium vivax*.

e) B.Sc. Students Undertaking Training

1. Kanokon Teranuluk, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Separation and structural studies of oligosaccharides synthesized by reverse hydrolysis using β -glucosidase from almond

2. Narumol Jirundorn, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Separation and structural studies of oligosaccharides synthesized by reverse hydrolysis using β -glucosidase from almond
3. Chintana Benjasiraruk, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Photochemical studies of novel pyrenyl probe on specific cleavage of proteins
4. Miss Jarinee Pongputh, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Photochemical studies of novel pyrenyl probe on specific cleavage of proteins
5. Miss Rachaneewan Chanda, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Footprint metal binding sites on proteins
6. Miss Jenjira Pulwittayakij, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Chemical studies of cobalt (III) complexes on specific cleavage of proteins
7. Miss Amporn Ratanapane, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Footprint metal binding sites on proteins
8. Miss Chintana Benjasiraruk, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Chemical studies of cobalt (III) complexes on specific cleavage of proteins
9. Miss Pinrutai Suwanpradit, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Photochemical studies of novel pyrenyl probe on specific cleavage of proteins
10. Miss Duangnate Supasorn, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Photochemical studies of novel pyrenyl probe on specific cleavage of proteins
11. Miss Natchatorn Saksuporn, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Footprint metal binding sites on proteins
12. Mr. Suratat Noisert, B.Sc. study, Chemistry, Srinakharintwirot University, Prasarnmit; Project title: Footprint metal binding sites on proteins
13. Anothai Supanpong, B.Sc. study, Chemistry, Mahidol University, Research area: Bioactive secondary metabolites from endophytic fungi.
14. Miss Usa Dokprom, B.Sc. study, Chemistry, Mahidol University, Research area: Biochemical studies of *Plasmodium vivax* dihydrofolate reductase mutants
15. Miss Tippawan Ketkeaw, B.Sc. study, Chemistry, Mahidol University, Research area: Linamarase as a stereoselective catalyst in glucoside syntheses
16. Mr. Preechan Thiampanya, B.Sc. study, Chemistry, Mahidol University, Research area: X-ray crystallographic study of cyclohexanone monooxygenase
17. Miss Srisuda Tirakarn, B.Sc. study, Chemistry, Mahidol University, Research area: X-ray crystallographic study of cyclohexanone monooxygenase and linamarase
18. Miss Aimon Tongpenyai, B.Sc. study, Chemistry, Mahidol University, Research area: X-ray crystallographic study of metacycloprodigiosin
19. Miss Patnapa Satchathap, B.Sc. study, Chemistry, Mahidol University, Research area: Biotransformation of diketones.

20. Miss Jarassri Ruengwatanakee, B.Sc. study, Chemistry, Mahasarakham University, Research area: Screening of glycosidase enzymes from plants from Northeast Thailand
21. Miss Suchana Wanich, B.Sc. study, Chemistry, Mahasarakham University, Research area: Screening of glycosidase enzymes from plants from Northeast Thailand
22. Miss Cholticha Unaprom, B.Sc. study, Chemistry, Mahasarakham University, Research area : Testing of carbohydrate hydrolysis in Aloe vera by partially purified α -mannosidase from *Albizzia procera* Benth.
23. Miss Saisunee Wonglakorn, B.Sc. study, Chemistry, Mahasarakham University, Research area: Alkyl mannoside synthesis by α -mannosidase from *Albizzia procera* Benth.
24. Miss Nantidaporn Ruangchan, B.Sc. study, Chemistry, Mahasarakham University, Research area: Isolation of glycosidase-producing bacteria from-soil and water samples in Mahasarakham province
25. Miss Wacharee Wichairam, B.Sc. study, Chemistry, Mahasarakham University, Research area: Screening of glycosidase enzymes from plants from Northeast Thailand
26. Miss Wilailak Chantasang, B.Sc. study, Chemistry, Mahasarakham University, Research area: Screening of glycosidase enzymes from plants from Northeast Thailand
27. Miss Wilailak Angkaew, B.Sc. study, Chemistry, Mahasarakham University, Research area: Ability of α -mannosidase from *Albizzia procera* Benth.
28. Mr Wanchai Khonthon, B.Sc. study, Chemistry, Mahasarakham University, Research area: Alkyl mannoside synthesis by α -mannosidase from *Albizzia procera* Benth
29. Miss Nittaya Thontha, B.Sc. study, Chemistry, Mahasarakham University, Research area: Looking for the natural substrate of α mannosidase from *Albizzia procera* (Benth.)
30. Miss Yubon Boonsom, B.Sc. study, Chemistry, Mahasarakham University, Research area: Looking for the natural substrate of α mannosidase from *Albizzia procera* (Benth.)
31. Miss Ulaiwan Thaseesang, B.Sc. study, Chemistry, Mahasarakham University, Research area: Ability of α -mannosidase from *Albizzia procera* Benth.
32. Miss Rittichai Wiseschart, B.Sc. study, Chemistry, Mahasarakham University, Research area: Transmannosylation of alcohol using partially-purified α mannosidase from *Albizzia procera* (Benth.)
33. Miss Waraporn Seeponle B.Sc. study, Chemistry, Mahasarakham University, Research area: Transmannosylation of alcohol using partially-purified α mannosidase from *Albizzia procera* (Benth.)
34. Miss Nitiya Sirichetphuriwat, B.Sc. study, Chemistry, Mahasarakham University, Research area: Testing of carbohydrate hydrolysis in Aloe vera by partially purified α -mannosidase from *Albizzia procera* Benth.

35. Miss Suchana Wanich, B.Sc. study, Chemistry, Mahasarakham University, Research area: Screening of glycosidase enzymes from plants from Northeast Thailand.
36. Miss Cholthicha Unaprom, B.Sc. study, Chemistry, Mahasarakham University, Research area: Testing of carbohydrate hydrolysis in Aloe vera by partially purified α -mannosidase from *Albizia procera* Benth.
37. Saisunee Wonglakorn, B.Sc. study, Chemistry, Mahasarakham University, Research area: Alkyl mannoside synthesis by α -mannosidase from *Albizia procera* Benth.
38. Nantidaporn Ruangchan, B.Sc. study, Chemistry, Mahasarakham University, Research area: Isolation of glycosidase-producing bacteria from-soil and water samples in Mahasarakham province.
39. Mr Sirisak Sosupimarn, B.Sc. study, Biology, Mahidol University, Research area: Purification and Crystallization of *Plasmodium falciparum* Plasmepsin II.
40. Mr Yuthapong Pongboonchoo, B.Sc. study, Biology, Mahidol University, Research area: Purification and Crystallization of *Plasmodium falciparum* Plasmepsin II.
41. Miss Rossukon Thongwichian, B.Sc. study, Chemistry, Mahidol University, Research area: Mutation study of *Plasmodium falciparum* plasmepsins.
42. Mr. Pallop Ekkaratcharoenchai: B.Sc. study, Chemistry, Mahidol University, Research area: Purification and characterisation of luciferase from luminous bacteria.
43. Miss Methinee Prongjit, B.Sc. study, Chemistry, Mahidol University, Research area: Purification and characterization of flavin reductase from luminous bacteria.
44. Miss Jarunee Leongthongaram, B.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Effect of germination on the α -mannosidase activity in rosella
45. Miss Kanokpan Thammawat, B.Sc., General Science, Kasetsart University, Kamphaengsaen Campus, Research area: Study of fundamental characteristics of naringinase from plants for the application of fruit juice debitterness
46. Mr Thanade Pao-in, B.Sc. study, Biochemistry, Kasetsart University, Kamphaengsaen, Research area: Synthesis of oligosaccharides by α -mannosidase
47. Mr. Narongsak Jojeen, B.Sc. study, Biochemistry, Kasetsart University; Project title: Cloning and expression of *D. cochinchinensis* β -glucosidase in *Pichia pastoris*.
48. Miss Jureerat Boonrak, B.Sc., Biochemistry, Kasetsart University; Project title: Cloning and expression of *D. cochinchinensis* β -glucosidase with N-terminal polyhistidine-tag in *Pichia pastoris*.
49. Miss Peeraya Teawwatanakool, B.Sc., Biochemistry, Kasetsart University; Project title: Cloning and expression of *D. cochinchinensis* β -glucosidase in *Saccharomyces cerevisiae*.
50. Miss Supinda Chalermpanpipat, B.Sc. Biotechnology, Mahidol University, graduated March 2002, Project title: Preparation of selective sericin and fibroin media for screening of sericin-degrading bacteria.
51. Miss Pranom Chantrawisuk, B.Sc, Biotechnology, Mahidol University, graduated March 2003, Project title: Screening for sericin-specific protease from microorganisms: preparation of silk sericin and silk fibroin powders.

52. Miss Sawitree Phatchoo, B.Sc., Biotechnology, Mahidol University, graduated March 2004, Project title: Screening for sericin-specific protease from microorganisms: study of proteases from bacterial strain KC001–009.

f) Graduate Students Performing Research Overseas

1. Miss. Phimonphan Chuankhayan worked with Prof. Patrick Sullivan, Director of the Institute of Biomolecular Sciences at Massey University in Palmerston North, New Zealand from Jan., 2000 until Jan., 2001. While there, she has completed cloning of the *D. nigrescens* β -glucosidase cDNA and cloned a full-length cDNA into expression vectors for expression in *E. coli* and *P. pastoris*. This work was supported by a Royal Golden Jubilee Scholarship from the Thailand Research Fund.
2. Miss Rodjana Opassiri traveled to Virginia Polytechnic Institute and State University in Blacksburg, VA, USA from Jan. 18, 2002 until August 2, 2002 to work with Prof. Asim Esen in the Dept. of Biology. She worked to further characterize her recombinant enzymes (rice Bglu1 and Bglu2) activities, improve recombinant expression of rice Bglu2 and develop antibodies for immunocytochemistry to localize the proteins in the plant tissues and cells. This work is supported by a Royal Golden Jubilee Scholarship from the Thailand Research Fund.
3. Miss Rakrudee Sarntima travelled to work with Prof. Malcolm Walkinshaw of the Centre for Cell and Molecular Biology, University of Edinburgh, U.K., from January 2002 until March 2003, supported by a scholarship from the Ministry of University Affairs. She attempted to crystallize Thai Rosewood dalcocinase for the purposes of determining its three-dimensional structure.
4. Mr. Dumrongkiet Arthan travelled to work with Professor Asim Esen of the Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA from February 2002 until March 2003, supported by a scholarship from the National Center for Genetic Engineering and Biotechnology. He purified *Solanum torvum* β -glucosidase and tried to clone the β -glucosidase gene.
5. Mr. Jeerus Sucharitakul is doing research at the enzyme *p*-Hydroxyphenylacetate Hydroxylase at the laboratory of Professor D.P. Ballou, Department of Biological Chemistry, University of Michigan, Ann Arbor, U.S.A., October 2003–September 2004.
6. Miss Preeyachan Laourthai is currently learning techniques for detecting compounds which stimulate the synthesis of fetal hemoglobin (Hb F) at the laboratory of Dr. Panos Ioannou Murdoch Children's Research Institute, Royal Children's Hospital Victoria Australia, January 2004 – July 2004.
7. Miss Chutintorn Suadee, Ph.D. study, Biochemistry, Mahidol University; Research area: Study of Luciferase Enzymes from Marine Organisms at the laboratory of Professor D.P. Ballou, Department of Biological Chemistry, University of Michigan, Ann Arbor, U.S.A. .
8. Miss Pornphimon Metheenukul traveled to Japan to work with Prof. Tatsuhito Fujimura, Institute of Agricultural and Forest Engineering, University of Tsukuba, Tsukuba, Ibaraki Japan, September, 2002 – August, 2003, supported by a scholarship from the Association for International Education, Japan (AIEJ).

VI. Other Grants Received by Researchers

1. Jisnusun Svasti: "Analysis of Proteins, Blood, and Body Fluids for Diagnosis, Counseling and Treatment of Genetic Diseases"; from Chulabhorn Research Institute 600,000 baht/year; October 2001-September 2003.
2. Jisnusun Svasti: "Abnormalities in proteins and enzymes in relation to cancers found in Thailand", from Chulabhorn Research Institute 400,000 baht/year; October 2001-September 2003.
3. Jisnusun Svasti: "Proteomic Analysis Of The Effect Of Bioactive Compounds On Cancer Cell Lines from Chulabhorn Research Institute 400,000 baht/year; October 2001-September 2003.
4. Pimchai Chaiyen "Mechanistic and kinetic studies of the novel two-protein component enzyme: *p*-hydroxyphenylacetate hydroxylase"; from TRF 360,000 baht per year and supplemental support from Faculty of Science 120,000 baht/year, November 2001-November 2004.
5. Apinya Buranaprapuk "Design and synthesis of new protein photocleaving reagent: role of ionic group in the probe side chain on the binding affinity and the photocleavage of proteins" from Srinakarinwirot University, 239,000 baht, December 2001 – November 2002.
6. Wipa Suginta "Functional and Structural Characterisation of *V. carchariae* Expressed in an *E. coli* System: Medical Application from Bioconversion of Chitin" from TRF 240,000 baht/year, July 2002-June 2004.
7. Sujint Anguravirutt "Screening for Novel Plant Glycosidases and Characterization of α -mannosidase from *Albizia procera* Benth." from TRF 240,000 baht/year, July 2002-June 2004.
8. Wipa Suginta (Group project) on "Development of over-expression system of recombinant chi A from *V. carchariae* in *E. coli* for functional characterisation" from Suranaree University of Technology, 345,000 baht/year, October 2002 – October 2006, 30% time involved.
9. Wipa Suginta (Single project) "Gene isolation and expression of outer membrane protein, OM-1 of *B. pseudomallei* for porin activity investigation", 300,000 baht/year between October 2002-October 2005.
10. Prachumporn Toonkool "Expression and mutation studies of β -glucosidases from Thai plants"; from Faculty of Science, Kasetsart University 100,000 baht, September 2002-September 2003.

11. James Ketudat-Cairns *et al.* "Investigation of Rice Beta-Glycosidase Gene Functions"; from the National Science and Technology Development Agency National Center for Genetic Engineering and Biotechnology. 3,700,000 baht, July 2003-June, 2006.
12. Prachumporn Toonkool "Protein engineering of plant β -glucosidases and its potential industrial applications"; from Thailand Research Fund. 480,000 baht, August 2003-July 2005.
13. Prachumporn Toonkool "Protein engineering of plant β -glucosidases"; from Third World Academy of Science. 9,000 US Dollars, August 2003-February 2005.
14. Apinya Chaivisuthangkura "Photochemical and mechanistic studies on selectivity of protein photocleavage" from Srinakharinwirot University, 259,000 baht, March 2004 - February 2005.
15. Wipa Suginta "Isolation, Purification and Gene Isolation of a Chitinase from a Marine Bacterium, *Vibrio alginolyticus* strain 283 for Determination of Its Enzymatic Properties in Chitin Utilization" Suranaree University Grant: 523,200 baht (in year 2004), October 2003-September 2005.
16. Center for Protein Structure and Function (Jisnusun Svasti, Jirundon Yuvaniyama, Palangpon Kongsaree, Pimchai Chaiyen, and Pramwadee Wongsangchantra) "Structural and mechanistic studies of enzymes with potential applications", from Mahidol University Research Program Budget, October 2003 – September 2006; 4,213,120 baht for first year (Oct 2003-Sept 2004)
17. Jisnusun Svasti, "Protein Changes in Human Disease", 700,000 baht from October 2004-September 2005, National Research Council of Thailand, as one project in the Integrated Project on "Production of Graduates and Researchers in Physics, Mathematics, and Medical Biotechnology (total support 15.0 million baht for 2004-2005)

VII. Prizes, Fellowships and Promotions

a) Prizes

1. Professor M.R. Jisnuson Svasti, awarded the Outstanding Scientist of Thailand Award, Foundation for the Promotion of Science and Technology under Royal Patronage of H.M. The King, 18 August 2002.
2. Professor M.R. Jisnuson Svasti, awarded Outstanding Researcher, Chemical Sciences and Pharmacy section, National Research Council of Thailand, August 2003.
3. Professor M.R. Jisnuson Svasti, Outstanding Lecturer, Faculty Club, Faculty of Science, Mahidol University
4. Professor M.R. Jisnuson Svasti, Exemplary Lecturer, Faculty Club, Mahidol University
5. Dr. Jirundon Yuvaniyama, awarded the Young Scientist of Thailand Award, Foundation for the Promotion of Science and Technology under Royal Patronage of H.M. The King, 18 August 2003.
6. Dr. Palangpon Kongsaree, awarded the Young Scientist Award, Foundation for the Promotion of Science and Technology, under Royal Patronage of H.M. The King, 18 August 2003.
7. Dr. Pimchai Chaiyen, awarded UNESCO-L'Oreal Women in Science Fellowship, April 2003
8. Dr. Apinya Buranaprapuk, awarded Outstanding Thesis Award, Chemistry and Pharmacy Section, National Research Council of Thailand, September 2001.

b) Promotions and Fellowships

1. Dr. Palangpon Kongsaree, promoted to be Associate Professor, July 2003
2. Dr. Pimchai Chaiyen, promoted Assistant Professor, October 2001
3. Dr. Wipa Suginta, DAAD Fellowship to for training and research in Germany: a) Dept. of Chemical Biology, Max Planck Institute for Molecular Physiology, Dortmund, 1-30 April 2003; b) Dept. of Analytical Chemistry, Ruhr University of Bochum, Germany
4. Wipa Suginta, The General Travel Award from the British Biochemical Society for a research visit to the Max Planck Institute for Molecular Physiology, Dortmund, between April 1-May 15, 2004

5. Prachumporn Toonkool, awarded the FAOBMB Travel Fellowship, to attend the 16th FAOBMB Symposium, 20–22 September 2002, Taipei, Taiwan.
6. Dr. Jirundon Yuvaniyama, Associate Member, Thai Academy of Science and Technology Foundation, Thailand.
7. Dr. Palangpon Kongsaree, Associate Member, Thai Academy of Science and Technology Foundation, Thailand.
8. Wipa Suginta, The General Travel Award from the British Biochemical Society for a research visit to the Max Planck Institute for Molecular Physiology, Dortmund, between April 1-May 15, 2004

VIII. Other Scientific Activities

1. Group Meetings, Seminar and Staff Meeting

A regular group meeting is held every two weeks, attended by staff and students involved in this grant. Typically, these are informal presentations by students, but occasionally staff may also address specific aspects of their research. Then, when there are visitors from overseas, seminars are arranged by our group through the Department of Biochemistry and Center for Protein Structure and Function at the Faculty of Science, Mahidol University. Apart from that, meetings are held every two months between all staff members in the project. Typically, these meetings will cover management aspects, followed by reports of research progress by staff members.

2. Establishment of Center for Excellence in Protein Structure and Function

As part of the overall objective of promoting protein research, the Center for Excellence in Protein Structure and Function, has been established at the Faculty of Science, Mahidol University. With Professor Jisnuson Svasti is head of the group, and other members are Drs. Palangpon Kongsaree, Jirundon Yuvaniyama, Pimchai Chaiyen, and Pramvadee Y. Wongsangchantra. Most of the equipment provided by the Faculty of Science, amounting to 28.3 million baht over three years, has now been installed. In particular, the stop-flow kinetics apparatus and the X-ray diffractometer are now fully functional and allow studies of pre-steady state kinetics and three-dimensional structure to be carried out locally in Thailand. This not only increases the capability of our group to study structure-function relationships in proteins, but also stimulates cooperation both with scientists in the TRF grant, as well as other scientists.

3. Mentorship and the Research Encouragement Program (Jearanai Petch)

Mentorship is an important activity, whereby a senior scientist can help in the development of younger scientists. Professor Jisnuson Svasti has been mentor to 4 Ph.D. researchers in this senior research scholar grant, namely Drs. Patjraporn Wongvithoonyaporn, Sujint Anguravirutt, Wipa Suginta, and Prachumporn Toonkool, and is also advisor of Dr. James Ketudat-Cairns' grants. He also became mentor of other young Ph.D. researchers, three as via contact through the Researcher Encouragement Program (Jearanai Petch), and three others by direct contact. These six researchers are listed below:

- a) Dr. Sompong Thammasirirak, Department of Biochemistry, Faculty of Science, Khonkaen University; Project title: Purification, Characterization, Complete Amino Acid Sequence and Evolution of Reptile Lysozymes
- b) Dr. Suthee Wattanasiriwech, Mae Fah Luang University; Project title: Preparation of Amorphous Silica from Rice Husk using the Enzymatic Approach

- c) Dr. Songkran Chuakrut, , Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Project title: Biochemical and molecular characterization of a thermostable acetyl-CoA carboxylase from the thermophilic photosynthetic bacterium
- d) Dr. Kittisak Yokthongwattana; Department of Biochemistry, Faculty of Science, Mahidol University, Project title: Characterization of the zeaxanthin-enriched membranes in green algae.
- e) Dumrongkiet Arthan Lecturer, Department of Tropical Nutrition and Food Science, Faculty of Tropical Medicine, Mahidol University, Isolation and characterization of β -glucosidase hydrolyzing iridoid glucoside and its natural substrates from *Gonocayum robbianum* and other Thai plants.
- f) Dr. Chanpen Chanchao, Department of Biology, Faculty of Science, Chulalongkorn University, Project title: α -glucosidase from Thai bees [joint mentorship with Prof. Siriwat Wongsiri]

4. Protein Research Network

A Thai Protein Research Network, affiliated to the Biochemistry and Molecular Biology Section of the Science Society of Thailand, was set up in December 2001 to exchange news between researchers interested in study of proteins. This network presently operates by e-mail through a server located at the National Synchrotron Research Center. Interested parties may subscribe to this newsgroup by sending an e-mail to kumpanat@nsrc.or.th and writing "subscribe" in the subject and text of the email message. They will then receive news, ideas and comments submitted by other members of the network. They can also send news, ideas and comments through others in the network by sending an e-mail to: proteinX@nsrc.or.th. Such a self-operating network has been started, since it does not require time to coordinate.

5. Stang Mongkolsuk Distinguished Professor

We were fortunate to have Professor William N. Lipscomb, Nobel Laureate in Chemistry, visit the Center for Protein Structure and Function (CPSF), as Stang Mongkolsuk Distinguished Professor of the Faculty of Science, Mahidol University, for the period 16 June 2002 to 15 September 2002. Professor Lipscomb is Abbot and James Lawrence Professor Emeritus at the Department of Chemistry and Chemical Biology. He has had a distinguished career studying structure-function relationships initially in boron hydrides and later in enzymes, particularly zinc containing enzymes and allosteric enzymes.

During his stay, Professor Lipscomb gave lectures on "Boron Hydrides", "Linus Pauling: Science and Peace", "Zinc-containing Enzymes: carboxypeptidase and leucine aminopeptidase", as well as a lecture series on "Allosteric Enzymes", including

“Aspartate Transcarbamylase”, “Fructose-1,6-bisphosphatase”, and “Chorismate Mutase”. These were well attended by staff and students, not only of Mahidol University, but also from other universities. Professor Lipscomb also gave lectures at other universities, such as Chulalongkorn University, Kasetsart University (both Paholyothin and Kamphaengsaen), Chiangmai University, Khonkaen University, Burapa University, Silpakorn University, Srinakarintwirot University, Prasarnmitr, and University of the Thai Chamber of Commerce. In addition, he has lectured for other academic organizations, such as the Ministry of Science, Institute for the Promotion of Science and Technology, National Science and Technology Development Agency and Thailand Research Fund.

Professor Lipscomb also discussed research activities with staff and students at the Center for Excellence in Protein Structure and Function, and has agreed to act as an Advisor to the Center. These day-to-day interactions have undoubtedly had a stimulating influence, and have not only provided insights into protein structure and x-ray crystallography, but also given important ideas for research. He also had extensive discussions with the computational chemistry group at Chulalongkorn University (Supot Hannongbua) and the physical chemistry group at Kasetsart University (Jumras Limtrakul and Supa Hannongbua).

At more public level, he has also made some TV appearances to promote science, and was well-covered by the printed media. He has also met with the Minister for University Affairs, the Minister for Science, Technology, and Environment, and with the Prime Minister.

Professor Lipscomb’s visit has undoubtedly made a tremendous impact at many levels. Specifically, in the area of Protein Structure-Function Relationships, which is the focus of the CPSF, Professor Lipscomb has created appreciation and understanding of the field in scientists throughout Thailand. Then, in wider sphere, he has improved public awareness and support for science.

6. Protein Research Network Symposium 2002 on “Protein Structure and Molecular Enzymology”

CPSF organized as a Protein Research Network Symposium on “Protein Structure and Molecular Enzymology”, at the Faculty of Science, Mahidol University, 29-30 August 2002. This meeting was co-sponsored by the Thailand Research Fund, the Biochemical Section of the Science Society of Thailand and the Faculty of Science, Mahidol University. The program consisted of two Keynote Lectures by Prof. W.N. Lipscomb and Prof. Yongyuth Yuthavong (BIOTEC), and 18 Invited Lectures by Prof. M.R. Jisnuson Svasti, and Drs. Chanun Angsuthanasombat, Albert Ketterman, Palangpon Kongsaree, Apinya Buranaprapuk, Panudda Boonserm, Pimchai Chaiken, Piamsook Pongsawasdi, James Ketudat-Cairns, Jirawat Yongsawatdigul, Aran Incharoensak, Wanchai De-eknamkul, Wipa Suginta, Chantragan Srisomsap, Chanin Limwongse, Worachart Sirawaraporn, Jirundon Yuvaniyama, and Jerapun Krungkrai.

Overall, the lectures were excellent, and covered a broad ground in protein science, including enzyme isolation, catalytic properties, structure and mechanism, and protein abnormalities in disease. In addition, 43 Posters were presented (with 16 being from members of CPSF), leading to lively discussion, and three awards were presented to the best posters from students.

There were more than 200 registered participants from 23 institutions (with number of participants in parenthesis), namely: Burapa University (5), Chiangmai University (5), Chulabhorn Research Institute (3), Chulalongkorn University (27), Huachiew Chalermphrakiet University (2), Kasetsart University (15), Khonkaen University (5), King Mongkut's University of Technology Ladkrabang (4), King Mongkut's University of Technology Thonburi (3), Maejo University (1), Mahanakorn University of Technology (1), Mahasarakham University (2), Mahidol University (91), Naresuan University (7), National Center for Genetic Engineering and Biotechnology (12), National Institute of Health (4), Prince of Songkhla University (2), Ramkhamhaeng University (4), Rangsit University (4), Silpakorn University (1), Srinakarintwirot University (5), Suranaree University of Technology (13), and Thammasat University (6). This clearly indicates that there is a widespread interest in Protein Structure and Function in many universities and research institutions in Thailand. Such interest suggests that the Protein Research Network needs to be developed further to fulfil the needs of researchers in the field of protein science.

7. Mini-Symposium on Protein Structure and Function, 1 July 2003

Professor William N. Lipscomb, Advisor to Center for Protein Structure and Function, and Nobel Laureate in Chemistry from Harvard University, was awarded the Honorary Doctorate degree from Mahidol University in 2003. On this special occasion, the Center for Protein Structure and Function organized a "Mini-Symposium on Protein Structure and Function" at Room K102, Faculty of Science, Mahidol University at 09:00-12:00, 1 July 2003, in Professor Lipscomb's honor. This meeting was an event of the Protein Research Network, and also supported by the Thailand Research Fund. Professor Lipscomb delivered a Plenary Lecture on "Recent X-ray results and mechanisms of the allosteric enzyme aspartate transcarbamylase of *E. coli*". Professor Jisnusun Svasti gave the Opening Remarks and delivered a Closing Lecture on "Development of Protein Research in Thailand". In addition, there were three Invited Lectures by Dr. Jirundon Yuvaniyama, Dr. Palangpon Kongsaree, Dr. Pimchai Chaiyen. The meeting was attended by some 180 participants.

8. Joint Senior Research Scholar Meeting, August 22-23, 2003

Professors M.R. Jisnusun Svasti and Suthat Fucharoen held a Joint Thailand Research Fund Senior Research Scholar Meeting on "Protein Structure and Molecular

Enzymology” and on “Thalassemia Research” at the Royal River Hotel on 22-23 August 2003. The program consisted of 8 symposia, with four symposia from each group, arranged such that symposia from one group would be followed by symposia from the other group. The Center for Protein Structure and Function provided speakers in the section on “Protein Structure and Molecular Enzymology”. There were four symposia with speakers taken from the staff, students, and collaborators of the Center: namely: Purification and Applications of Enzymes (James R. Ketudat-Cairns, Patjaraporn Wogvithoonyaporn, Suthee Wattanasiriwech), Approaches to Studying Enzyme Catalysis (Pimchai Chaiyen, Jeerus Sucharitkul, Wipa Suginta, Dumrongkiet Arthan), Changes in Protein Structure and Human Disease (Chantragan Phiphobmongkol, Lukana Ngiwsara, Siriporn Keeratchamroen, Kriengsak Lirdprapamongkol), and Enzyme Structure and Function (Sompong Thammasirirak, Jirundon Yuvaniyama, Palangpon Kongsaree). The meeting was attended by some 150 persons, and contained an interesting mixture of basic and applied topics.

9. Joint Senior Research Scholar Meeting, September 14-15, 2004

Professor Jisnuson Svasti is planning to hold another joint Senior Research Scholar Meeting, September 14-15, 2004, this time with Professor Suthat Fucharoen and Professor Siriwat Wongsiri. Both investigators are collaborators of Professor Jisnuson Svasti. The joint meeting will extend from biology to molecular bioscience and medical science. It will therefore broaden the outlook of members of the team, and may give rise to additional research projects.

10. Seminars

Several protein scientists and enzymologists to give seminars at CPSF, sometimes jointly held with the Department of Biochemistry, as shown below. These special seminars by experts in the field were very stimulating for staff and students alike, and in particular, the lectures by Nobel Laureates, William Lipscomb and Robert Huber were absolutely memorable.

- 10.1 Professor Asim Esen, Virginia Polytechnic and State University, U.S.A. spoke on “The Mechanism of Substrate Specificity in β -Glucosidases”, 15 December 2000.
- 10.2 Professor Seiya Chiba, Hokkaido University, Japan spoke on “Catalytic Mechanism of Carbohydrate-Degrading Enzymes”, 18 January 2001.
- 10.3 Professor Malcolm D. Walkinshaw, University of Edinburgh, U.K. spoke on “Structure of Heme-containing Oxido-reductases: Flavocytochrome C and P450”, 29 May 2001.
- 10.4 Dr. James Ketudat-Cairns, Institute of Science Suranaree University of Technology, Nakorn Ratchasima spoke on “Molecular Characterization of β -

- Glucosidases and β -Galactosidases from Rice and Forest Legumes”, 28th September 2001.
- 10.5 Dr. Richard Ashley, University of Edinburgh, U.K. spoke on “Ion Channels that Bypass the Secretory Pathway: novel mechanisms for incorporation of membrane proteins”, 13 December 2001.
 - 10.6 Professor Richard N. Perham, University of Cambridge, U.K. spoke on “Multi-functional Enzymes as Catalytic Molecular Machines”, 16 February 2002.
 - 10.7 Professor William N. Lipscomb, Harvard University, U.S.A. spoke on “Zinc Enzymes: Carboxypeptidase A and Leucine Aminopeptidase”, 26 June 2002.
 - 10.8 Dr. Robert C. Robinson, Uppsala University, Sweden spoke on “The Structures of Gelsolin and Arp2/3 and their Role in Cell Movement”, 2 July 2002.
 - 10.9 Professor William N. Lipscomb, Harvard University, U.S.A. spoke on “Allosteric enzymes-I: Aspartate transcarbamylase”, 3 July 2002.
 - 10.10 Professor William N. Lipscomb, Harvard University, U.S.A. spoke on “Allosteric enzymes- II: Fructose-1,6-Bisphosphatase”, 10 July 2002.
 - 10.11 Professor William N. Lipscomb, Harvard University, U.S.A. spoke on “Allosteric enzymes-III: Chorismate Mutase of Yeast”, 17 July 2002.
 - 10.12 Dr. David P. Ballou, Department of Biological Chemistry, University of Michigan, Ann Arbor, “Structure and Mechanism of Methylene tetrahydrofolate reductase”, 13th August 2003.
 - 10.13 Professor Asim Esen, Virginia Polytechnic and State University, U.S.A. spoke on “Isolation and Characterization of a β -Glucosidase Aggregating Factor (BGAF) and its Specific Interaction with Maize β -Glucosidases”, 15 August 2003.
 - 10.14 Professor Linda Fothergill-Gilmore, Institute of Cell and Molecular Biology, University of Edinburgh, Scotland spoke on “Three New Chemotherapeutic Targets in Trypanosomatic Parasites”, 3 October 2003.
 - 10.15 Professor Stephen G. Withers, Department of Chemistry, Faculty of Science, University of British Columbia, Vancouver, Canada spoke on “Understanding and Exploiting Glycosidases”, 21 January 2004.
 - 10.16 Professor Robert Huber, F.R.S., Max-Planck-Institut fuer Biochemie, Abteilung Strukturforschung, Martinsried, Germany spoke on “Protein Structures in Medicine”, 5th April 2004.
 - 10.17 Professor Edward J. Wood, School of Biochemistry & Molecular Biology, University of Leeds spoke on "Wound healing: what can *in vitro* models tell us?", 8th April 2004.

- 10.18 Dr. Ole Norregard Jensen, Department of Biochemistry and Molecular Biology, University of South Denmark, Denmark spoke on “ Proteomics and Mass Spectrometry: Strategies and Applications in Molecular Cell Biology”, 9th April 2004.

11. Workshop

A workshop on LC-MS was organized by Dr. Wipa Suginta between 4-6 August, 2003 at Suranaree University of Technology. Speakers/tutors included: Dr. Santi Sakdarat (Chemistry, Suranaree); Dr. Heino Prinz (Max Planck Institute for Molecular Physiology); and Dr. Wipa Suginta (Chemistry, Suranaree). The workshop was attended by 30 participants in the lecture session and 10 participants in the laboratory session.

IX. Target and Output

The output from this grant has generally been able to match or exceed the targets in the initial proposal (Table 13). Over the three year period of the grant, research yielded 22 publications in international journals, and two articles in international proceedings volumes, similar to the 23 publications in international journals projected in the initial proposal. Moreover, some 5 papers were in high impact journals with impact factor greater than 4.0. Many more presentations were also made at meetings than anticipated, with 27 abstracts in international meetings and 54 abstracts at national meetings over the three year period, compared to projections of 9 at international meetings and 26 at national meetings. Some of these were invited lectures by staff, but many were poster presentations by students, thus providing the opportunity for young researchers to gain experience.

In terms of training of young Ph.D. researchers, at the beginning of the grant there were 4 young researchers within the same faculty and 5 young researchers outside the faculty and/or in other universities. These researchers remained, and more young researchers became associated, either as investigators in the grant itself or as independent investigators, with Professor Jisnusi Svasti as their mentor. Thus at the end of the grant period, young researchers being developed by Professor Jisnusi Svasti included 5 researchers within the faculty and 9 researchers in other faculties or universities. Many of these researchers have produced publications at international level and/or have received their own grant funding.

Training of students also exceeded target over the three year period. Four Ph.D. students graduated and another 16 students are currently enrolled in the Ph.D. program. Nine M.Sc. students graduated, and another 15 students are currently enrolled in the M.Sc. program. At any given year the number of graduate students enrolled ranged between 8-15 students for the Ph.D. program and between 9-15 students for the M.Sc. program. In addition, 52 B.Sc. students performed their Senior Project research with staff in the grant. Thus staff members in the grant provided training to students with specialization in protein science and enzymology at all levels.

Table 13: Output from Project Compared to Original Plan^a

Planned/Actual Output	Year 1 Plan	Year 1 Actual	Year 2 Plan	Year 2 Actual	Year 3 Plan	Year 3 Actual	Total Plan	Total Actual
1. Publications in international journals	4	7	9	8	10	7	23	22
2. Articles in international proceedings	-	-	-	2	-	-	-	2
3. Books	-	-	-	-	-	-	-	-
4. Patents	-	-	-	-	-	-	-	-
5. Young scientists developed ^b								
5.1 Same institution	4	4	4	4	4	4	4	5
5.2 Different institution	5	6	5	8	5	5	5	9
6.1 Ph.D. students studying ^c	5	8	6	15	6	15	NA	16
6.2 Ph.D. students graduated	NA	0	NA	2	NA	2	NA	4
7.1 M.Sc. students studying ^c	5	9	6	14	7	15	NA	15
7.2 M.Sc. graduated	NA	1	NA	5	NA	3	NA	9
8. B.Sc. project students	9	17	9	18	9	17	27	52
9. Abstracts at international meetings	3	6	3	15	3	6	9	27
10. Abstracts at national meetings	8	16	8	16	10	22	26	54

^aActual output as shown in this grant, compared to projected output in original proposal; NA = not applicable, i.e. no projection made for this item

^bNumber of young Ph.D. level researchers working in grant at any given year, from within the Faculty of Science, Mahidol and outside

^cNumber of Ph.D. or M.Sc. students studying with staff in grant at any given year: each student typically studies 2-5 years

^dNumber of B.Sc. students taking Senior Projects in any give year: most students will study for only one year

APPENDIX: CURRICULUM VITAE OF INVESTIGATORS

(M.R.) Jisnuson SVASTI

- Born:** 25 September 1947; Bangkok, Thailand. **Nationality:** Thai
- Marital Status:** Married (8/8/68) to (M.R.) Phromchatra
Daughters: (M.L.) Sasibha (17/4/75), (M.L.) Chandrabha (20/5/78)
- Present Positions:**
- | | |
|--------------|--|
| 1982-present | Professor, Department of Biochemistry, Faculty of Science, Mahidol University, Rama VI Road, Bangkok 10400, Thailand.
http://www.sc.mahidol.ac.th/scbc |
| 2001-present | Head, Center for Excellence in Protein Structure and Function, Faculty of Science, Mahidol University, Bangkok 10400, Thailand
http://www.sc.mahidol.ac.th/subcontentresearch_pro.htm
http://www.cpsf.sc.mahidol.ac.th/ |
| 1990-present | Head, Laboratory of Biochemistry, Chulabhorn Research Institute, Don Muang, Bangkok 10210, Thailand
http://www.cri.or.th |
- Contact Address:**
- Professor Jisnuson Svasti,
Department of Biochemistry, Faculty of Science, Mahidol University, Rama VI, Bangkok 10400, Thailand.
- Tel:* (66-2)-2015457, 2015840; *Mobile:* (66-1)-8212135
Fax: (66-2)-248-0375 (office); 259-6634 (home)
e-mail: scjsv@mahidol.ac.th; svasti@loxinfo.co.th
http://www.sc.mahidol.ac.th/scbc/BCstaff/JS/JS_CV.htm
- Education:**
- | | |
|-----------|--|
| 1957-1960 | Cheam School, Headley, Nr. Newbury, Berkshire. |
| 1960-1965 | Rugby School, Rugby, Warwickshire. |
| 1965-1972 | Trinity College, Cambridge University. |
- Degrees:**
- | | |
|------|--|
| 1968 | B.A.(Hons) Natural Sciences (Biochemistry), Cambridge University, United Kingdom. |
| 1972 | M.A., Natural Sciences, Cambridge University, U.K. |
| 1972 | Ph.D, MRC Laboratory of Molecular Biology, Cambridge University, U.K. <i>Thesis title:</i> Sequence Studies on Mouse Immunoglobulins <i>Supervisor:</i> Dr.Cesar Milstein, F.R.S. (Nobel laureate) |

Professional Affiliation:

1972-1975	Lecturer, Department of Biochemistry, Faculty of Science, Mahidol University.
1975-1978	Assistant Professor, Department of Biochemistry, Faculty of Science, Mahidol University.
1976-1977	Senior Research Associate, Department of Human Biological Chemistry and Genetics, University of Texas Medical Branch, Galveston, Texas 77550, U.S.A.
1979-1982	Associate Professor, Department of Biochemistry, Faculty of Science, Mahidol University.
1980-1984	Chairman, Department of Biochemistry, Faculty of Science, Mahidol University.
1996-1997	Associate Dean, Faculty of Science, Mahidol University
1997-1999	Vice-President for International Relations, Mahidol University

Teaching Activities:

- a. Lecture and Laboratory Supervision in the following graduate and undergraduate courses: Molecular Biosciences, Basic Biochemistry, Advanced Biochemistry Laboratory. *Special interests:* Proteins; Enzymes; Biochemical Techniques.
- b. Biochemical Education: author of several articles in international educational journals; co-author of Thai biochemistry textbooks; co-producer of series of tape-slide instructional programs on biochemical techniques (in English and Thai)

Research Activities:

General interests: Protein structure and function, enzymology.

Past experience: Plasma proteins (immunoglobulins, plasma vitamin D binding protein); proteins unique to the male reproductive system (lactate dehydrogenase isozyme X, testis-specific histones, sperm protamines, seminal plasma acidic protease); biochemical action of the antifertility agent gossypol; preparation & distribution of restriction endonucleases.

Present interests: Glycosidase enzymes and glycosides; enzymatic synthesis of oligosaccharides and glycosides; genetic diseases including abnormal hemoglobins and inborn errors of metabolism; protein changes in relation to human cancer.

Professional Societies:

1972-present	Member, Science Society of Thailand
1981-present	Member, Biochemical Society, U.K.
1986-present	Member, Physics Society, Thailand
1991-present	Member, Chemical Society, Thailand
1992-present	Member, Thai Biotechnology Society
1995-present	Member, Japanese Society for Bioscience, Biotechnology & Agrochemistry
1997-present	Member, Protein Society, U.S.A

International Activities:

1979-1981	Coordinating Committee, Asian Network of Biological Science
1980-1986	Treasurer, Federation of Asian & Oceanian Biochemists
1989-1990	President-Elect, Federation of Asian and Oceanian Biochemists
1990-1992	President, Federation of Asian and Oceanian Biochemists (FAOB), http://www.bic.nus.edu.sg/faobmb/home.html
1993-1994	Past President, Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB)
1994	Chairman, Organising Committee, Eleventh FAOBMB Symposium on <i>Biopolymers and Bioproducts: structure, function and applications</i> , Bangkok, 15-18 November 1994
1996-2002	Member, Committee on Symposia, International Union of Biochemistry and Molecular Biology (IUBMB), http://www.iubmb.org
1996-present	Thai Delegate to IUBMB
1998-present	Governing Council, Asia-Pacific International Molecular Biology Network (A-IMBN),
2001-present	Membership Committee for Biochemistry and Biophysics, Third World Academy of Science (TWAS), http://www.twas.org
2003-present	Editorial Board, <i>Molecules and Cells</i> , Korean Society of Molecular and Cellular Biology
2003-present	Member, Health Committee, EAGLES (European Action on Global Life Sciences)
2004-present	Council Member, Asian-Oceanian Human Proteome Organisation Council

Local Activities:

1974-84, 1992-93	Editorial Board, Journal of the Science Society of Thailand
1985-1987	Editor-in-Chief, Journal of the Science Society of Thailand
1985-87, 2000-	Member, Executive Committee, Science Society of Thailand Under the Patronage of His Majesty the King, http://www.scisoc.or.th
1994-1998	Executive Committee, Journal of the Science Society of Thailand
1986-1987	Chairman, Biochemical Section, Science Society of Thailand
1988-present	Advisory Board, Biochemical Section, Science Society of Thailand
1991-1998	Committee Member, National Research Council of Thailand (Agriculture & Biology Section)
1982-1991	Board of Directors, Chumbot-Pantip Foundation
1984-present	Board of Directors, Prajadhipok-Rambhai Barni Foundation
1985-present	Board of Directors, Memorial Foundation for H.M. King Rama VII-Queen Rambhai Barni
1990-present	Board of Trustees, Cambridge-Thai Foundation
1995-2002	Associate Editor, Mahidol University Journal
1999-2000	Editorial Board, ScienceAsia, Journal of the Science Society of Thailand
2001-present	Editor-in-Chief, ScienceAsia, Journal of the Science Society of Thailand
2002-present	Committee Member, National Research Council of Thailand (Chemical Sciences & Pharmacy Section)
2003-2004	External Assessor of Chulalongkorn University for the Office of National Education Standards and Quality Assessment

Fellowships:

1968-1971	Coutts-Trotter Research Studentship, Trinity College, Cambridge
1972	Travel Fellowship, First International Symposium on Immunology, Gausdal, Norway
1974	Travel Fellowship, Third International Conference on Isozymes, New Haven, U.S.A.
1976	IUB Travel Fellowship, 10 th International Congress of Biochemistry, Hamburg, Germany

Local Awards, Honours and Decorations:

- | | |
|------|---|
| 1982 | Mahidol University Prize for Excellence in Research: “Chromatin Structure and Nucleic Basic Proteins in Mammalian Male Germ Cells” (with Nongnuj Tanphaichitr and Prasert Sobhon) |
| 1997 | Founding Member, Thailand Academy of Science and Technology (TAST) |
| 1998 | Outstanding Researcher Award, Ministry of University Affairs |
| 2001 | Senior Research Fellow, Thailand Research Fund |
| 2002 | Outstanding Scientist of Thailand Award, Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King |
| 2003 | Outstanding Researcher, Chemical Sciences and Pharmacy Section, National Research Council of Thailand |
| 2003 | Outstanding Lecturer, Faculty Club, Faculty of Science, Mahidol University |
| 2004 | Exemplary Lecturer, Faculty Club, Mahidol University |

International Honours:

- | | |
|------|---|
| 1994 | Honorary Member, Federation of Asian and Oceanian Biochemists and Molecular Biologists, Inc. (FAOBMB) |
| 1995 | Honorary Member, Philippine Society of Biochemistry and Molecular Biology |
| 1996 | Elected Fellow, Third World Academy of Science (TWAS) |
| 1998 | Member, Asia-Pacific International Molecular Biology Network |

Royal Decorations:

- | | |
|------|--|
| 1987 | Knight Grand Cross of the Most Noble Order of the Crown of Thailand |
| 1990 | Knight Grand Cross of the Most Exalted Order of the White Elephant |
| 1993 | Knight Grand Cordon (special class) of the Most Noble Order of the Crown of Thailand |
| 1998 | Knight Grand Cordon (special class) the Most Exalted Order of the White Elephant |

Summary of Publications:

Over 100 publications, as follows:

- 93 Research and Original Articles at International Level
- 9 Articles on Science Education and Educational Research at International Level
- 18 Editorials, Reviews and Other Academic Articles
- 4 Textbooks & Guidebooks

Selected Publications:

A. Research and Original Articles at International Level

1. Svasti, J. and Milstein, C. (1970) Variability of Interchain Binding of Immunoglobulins: interchain bridges of mouse IgG1. *Nature (Lond.)* **228**, 933-935.
2. Milstein, C. and Svasti, J. (1971) Expansion and Contraction in the Evolution of the Immunoglobulin Gene Pools. *Progress in Immunology*, vol.1 (B. Amos, ed.), pp. 33-45, Academic Press, New York and London.
3. Svasti, J. and Milstein, C. (1972) The Disulphide Bridges of a Mouse Immunoglobulin G1 Protein. *Biochem. J.* **126**, 837-850.
4. Svasti, J. and Milstein, C. (1972) The Complete Amino Acid Sequence of a Mouse Kappa Light Chain. *Biochem. J.* **128**, 427-444.
5. Svasti, J. and Milstein, C. (1972) The Parallel Nature of the Interchain Disulphide Bonds of Immunoglobulins: studies on a mouse IgG1 myeloma protein. *Europ. J. Biochem.* **31**, 405-422.
6. Adetugbo, K., Poskus, E., Svasti, J., and Milstein, C. (1975) Mouse Immunoglobulin Subclasses: cyanogen bromide fragments and partial sequence of a gamma 1 chain. *Europ. J. Biochem.* **56**, 503-519.
7. Svasti, J. and Viriyachai, S. (1975) The Properties of Purified LDH-C₄ from Human Testis. *Isozymes*, vol. 2, *Physiological Function* (Markert, C.L., ed.), pp. 113-127, Academic Press, N.Y. & London.
8. Svasti, M.R. J. and Viriyachai, S. (1975) The Purification of Lactate Dehydrogenase Isozymes LDH-A₄, LDH-B₄ and LDH-C₄ from Human Tissues. *J. Sci. Soc. Thailand* **1**, 57-71.
9. Pongsawasdi, P. and Svasti, J. (1976) The Heterogeneity of the Protamines from Human Spermatozoa. *Biochim. Biophys. Acta* **434**, 462- 473.
10. Svasti, M.R. J., Prawatmuang, P., Vajanamarhutue, C., Kadjaphai, A., Wangthammang, S. and Talupphet, N. (1976) The Presence of Two IgG Subclasses in Waterbuffalo Immunoglobulins. *J. Sci. Soc. Thailand* **2**, 56-66.
11. Svasti, J. (1977) An Addition at the C-terminus of Water-Buffalo Immunoglobulin Lambda Chains. *Biochem. J.* **161**, 185-187.
12. Svasti, J. and Bowman, B.H. (1978) Human Group-Specific Component: changes in electrophoretic mobility resulting from vitamin D-binding and from neuraminidase digestion. *J. Biol. Chem.* **252**, 4188-4194.
13. Svasti, J. and Talupphet, N. (1979) Improvement in the Resolution of Human Sperm Protamines by Use of Iodoacetamide as Labelling Agent. *Biochim. Biophys. Acta* **577**, 221-225.
14. Svasti, J., Kurosky, A., Bennett, A. and Bowman, B.H. (1979) Molecular Basis for the Three Major Forms of Human Serum Vitamin D Binding Protein (Group-Specific Component). *Biochemistry* **18**, 1161- 1167.
15. Svasti, J., Kurosky, A., Bennett, A., Surarit, R. and Bowman, B.H. (1979) Structure and Properties of Human Plasma Vitamin D Transport Protein (Group-Specific Component). *Vitamin D: Basic Research and its Clinical Applications* (Norman, A.W. et al., eds.), pp. 149-152, Walter de Gruyter and Co., Berlin.
16. Toowicharanont P. and Svasti, J. (1980) A Logical Approach to the Isolation of Lactate Dehydrogenase Isozyme X from Human Testes: a general rationale for the isolation of homotetrameric LDH isozymes. *Experientia* **36**, 37-38.

17. Surarit, R. and Svasti, J. (1980) Effect of Ligand Binding on the Conformation of Human Plasma Vitamin D Binding Protein (Group-Specific Component). *Biochem. J.* **191**, 404-410.
18. Surinrat, P., Svasti, J. and Surarit, R. (1981) Improved Purification and Fluorescence Changes upon Activation of Human Seminal Plasma Acidic Protease. *Biochim. Biophys. Acta.* **659**, 38-47.
19. Anguravirutt, S. and Svasti, J. (1981) A New Procedure for the Purification of Rat Testis-Specific Histone TH2B Involving Affinity Related Chromatography. *Arch. Biochem. Biophys.* **210**, 412-416.
20. Surarit, R. and Svasti, J. (1982) Human Vitamin D Binding Protein: conformation and structure. *Vitamin D, Chemical, Biochemical and Clinical Endocrinology of Calcium Metabolism* (A.W. Norman et al, eds), pp. 1187-1190, Walter de Gruyter and Co., Berlin & New York.
21. Wattanaseree, J. and Svasti, J. (1983) Human Testis-Specific Histone TH2B: Fractionation and Peptide Mapping. *Arch. Biochem. Biophys.* **225**, 892-897.
22. Svasti, J., Anguravirutt, S. and Toowicharanont, P. (1984) The Application of Affinity Chromatography in the Isolation of Proteins and Enzymes Specific for Male Germ Cells. *Proceedings, Third Symposium of the Federation of Asian and Oceanian Biochemists, Bali, Indonesia* (Moeljohardo, D.S., ed.), pp.32-38.
23. Tanphaichitr, N., Siwarungson, N., Chalermisrachai, P. and Svasti, J. (1984) Nuclease Digestion of Rat Testis Nuclei with TH1 and TH2B. *Proceedings, Third Symposium of the Federation of Asian and Oceanian Biochemists, Bali, Indonesia* (Moeljohardjo, D.S., ed.), pp. 59-68.
24. Wattanaseree, J., Svasti, J., Bubpaniroj, P. and Mitranond, V. (1984) Effect of Vitamin A Deficiency on the Testis-Specific Basic Proteins of the Rat. *J. Biochem. (Tokyo)* **95**, 179-186.
25. Reid, W.A., Vongsorasak, L., Svasti, J., Valler, M.J. and Kay, J. (1984) Identification of the Acid Proteinase in Human Seminal Fluid as a Gastricsin Originating in the Prostate. *Cell Tiss. Res.* **236**, 597- 600.
26. Yongvanich, T. and Svasti, J. (1984) Structural Differences between Somatic H2B and Testis- Specific TH2B Histones of the Rat. *Experientia* **40**, 845-846.
27. Tanphaichitr, J., Svasti, J. and Sobhon, P. (1984) Molecular Mechanism of the Antifertility Effects of Gossypol: a review. *J. Sci. Soc. Thailand* **10**, 197-206.
28. Reid, W.A., Liddle, C.N., Svasti, J. and Kay, J. (1985) Gastricsin in the Benign and Malignant Prostate. *J. Clin. Pathol.* **38**, 639-643.
29. Vongsorasak, L. and Svasti, J. (1985) Inhibition of Liquefaction and Protein Degradation of Human Semen by Gossypol. *Int. J. Androl.* **8**, 472-486.
30. Svasti, J. (1986) Analysis of Amino Acid Sequence. In *Application of Genetic Engineering on Tropical Disease Pathogens with Special Reference to Plasmodia: a laboratory manual of selected techniques* (S. Panyim, P. Wilairat and Y. Yuthavong, eds.), UNDP/World Bank/ WHO TDR, pp. 247-259.
31. Vongsorasak, L. and Svasti, J. (1986) Gossypol Prevents Activation of Purified Proenzyme of Human Seminal Plasma Acidic Proteinase. *Biochim. Biophys. Acta.* **883**, 271-276.
32. Manavanich, C., Anguravirutt, S. and Svasti, J. (1986) Effect of Gossypol on Lactate Dehydrogenase Isozymes of the Rat. In *Contemporary Themes in Biochemistry* (Kon, O.L. et al, ed.), ICSU Short Reports Vol. 6, Cambridge University Press, pp. 304-305.

33. Boontrakulpoontawee, P., Yongsuwan, S., Svasti, J., Winichagoon, P. and Fucharoen, S. (1986) Characterisation of Hemoglobin Variants in Thailand. In *Contemporary Themes in Biochemistry* (Kon, O.L. *et al.*, ed.), ICSU Short Reports Vol. 6, Cambridge University Press, pp. 606- 607.
34. Boontrakulpoontawee, P., Svasti, J., Fucharoen, S. and Winichagoon, P. (1987) Identification of Hb Lepore-Washington-Boston in Association with HbE in a Thai Female. *Hemoglobin* **11**, 309- 316.
35. Yongsuwan, S., Svasti, J. and Fucharoen, S. (1987) Decreased Heat Stability Found in Hemoglobin Queens. *Hemoglobin* **11**, 567-570.
36. Boontrakulpoontawee, P., Svasti, J., Fucharoen, S. and Winichagoon, P. (1988) Double Heterozygosity for HbE and a Lepore-type Hemoglobin in a Thai Woman. *Thalassemia: Pathophysiology and Management Part A* (Fucharoen, S., Rowley, P.T. and Paul, N.W., eds.), Alan R. Liss, Inc., New York, pp. 269-274.
37. Svasti, J. (1992) Federation of Asian and Oceanian Biochemists: where now after twenty years. *Trends in Biochem. Sci.* **17**, 53- 55.
38. Svasti, J., Surarit, R., Srisomsap, C., Pravatmuang, P., Wasi, P., Fucharoen, S., Blouquit, Y., Galacteros, F., and Rosa, J. (1993) Identification of Hb Anantharaj [$\alpha 11(A9)Lys \rightarrow Glu$] as Hb J- Wenchang-Wuming [$\alpha 11(A9)Lys \rightarrow Gln$]. *Hemoglobin* **17**, 453-455.
39. Siriboon, W., Srisomsap, C., Winichagoon, P. Fucharoen, S., and Svasti, J. (1993) Identification of Hb C [$\beta 6(A3)Glu \rightarrow Lys$] in a Thai Male. *Hemoglobin* **17**, 419-426.
40. Svasti, J., Srisomsap, C., Siriboon, W., Fucharoen, S., Winichagoon, P., Pravatmuang, P. and Surarit, R. (1993) The Structure of Abnormal Hemoglobins in Thailand. *Recent Advances in Molecular and Biochemical Research on Proteins* (Wei, Y.-H., Chen, C.-S. and Su, J.-C., eds), World Scientific Press, Singapore, pp. 197-200.
41. Svasti, J., Boontrakulpoontawee, P., Yongsuwan, S., Sarikaputi, M., Siriboon, W., Srisomsap, C., Fucharoen, S., Winichagoon, P., Pravatmuang, P., and Surarit, R. (1994) Structural Analysis of Proteins in Thailand: Identification of abnormal hemoglobins. *Pure & Appl. Chem.* **66**, 105-110.
42. Surarit, R. Svasti, M.R. J., Srisomsap, C., Suginta, W., Khunyoshyeng, S., Nilwarangkoon, S., Harnsakul, P. and Benjavongkulchai, E. (1995) Possible Use of Glycosidase Enzymes from Thai Plant Seeds for Oligosaccharide Synthesis. *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok., pp. 251-255.
43. Suginta, W., and Svasti, J. (1995) β -Galactosidase from Thai Jute: purification and characterization. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, pp. 256-260.
44. Khunyoshyeng, S., Srisomsap, C., Champattana-chai, V., Boonpuan, K., Sawangareetrakul, P., Surarit, R. and Svasti, M.R.J. (1995) Purification and Properties of β -D-Glucosidase / β -D-Fucosidase from *Dalbergia cochinchinensis* Pierre. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, pp. 246-250.
45. Srisomsap, C., Khunyoshyeng, S., Surarit, R. and Svasti, M.R.J. (1995) Studies of Oligosaccharide Synthesis by Enzymes from *Dalbergia cochinchinensis* Pierre. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, 241-245.
46. Benjavongkulchai, E., Surarit, R., Bucke, C., and Svasti, M.R. J. (1995) Glucosyl Acceptors of Dextranase from *Streptococcus mutans*. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, 230-234.

47. Siriboon, W., Svasti, M.R.J., Srisomsap, C., Winichagoon, P. and Fucharoen, S. (1995) Discovery of a New Hemoglobin C Mutation in Thailand. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. et al., eds.), Samakkhisan Public Co. Ltd., Bangkok, pp. 159-163.
48. Suginta W. and Svasti, M.R.J. (1995) Purification and Properties of β -Galactosidase from *Hibiscus sabdariffa* L. var. altissima. *J. Sci. Soc. Thailand.* **21**, 183-186.
49. Sermuvityawong, K., Svasti, M.R.J., Sawangareetrakul, P., Kisamanonta, P. and Chulavatnatol, M. (1995) Aggregation of Cassava Linamarase. *J. Sci. Soc. Thailand.* **21**, 283-292.
50. Surarit, R., Svasti, M.R.J., Srisomsap, C., Suginta, W., Khunyoshyeng, S., Nilwarangkoon, S., Harnsakul, P., and Benjavongkulchai, E. (1995) Screening of Glycohydrolase Enzymes in Thai Plant Seeds for Potential Use in Oligosaccharide Synthesis. *J. Sci. Soc. Thailand.* **21**, 293-303.
51. Srisomsap, C., Svasti, J., Surarit, R., Champattanachai, V., Boonpuan, K., Sawangareetrakul, P., Subhasitanont, P. and Chokchaichamnankit, D. (1996) Isolation and Characterization of an Enzyme with β -D-Glucosidase/ β -D-Fucosidase Activities from *Dalbergia cochinchinensis* Pierre. *J. Biochem.* **119**, 585-590.
52. Svasti, J., Srisomsap, C., Surarit, R., Benjavongkulchai, E., Suginta, W., Khunyoshyeng, S., Champattanachai, V., Nilwarangkoon, S. and Rungvirayudx, S. (1996) Potential Applications of Plant Glycohydrolases for Oligosaccharide Synthesis. In *Protein Structure-Function Relationship* (Zaidi, Z.H. and Smith, D.L., eds.), Plenum Press, pp. 249-257.
53. Benjavongkulchai, E., Surarit, R., Bucke, C. and Svasti, J. (1996) Synthesis of Oligosaccharides by Dextranucrase from a Local Strain of *Streptococcus mutans*. *J. Sci. Soc. Thailand* **22**, 105-110.
54. Surarit, R., Matsui, H., Chiba, S., Svasti, J. and Srisomsap, C. (1996) Chemical Modification of β -Glucosidase/ β -Fucosidase from *Dalbergia cochinchinensis* Pierre by Conduritol B Epoxide. *Biosci. Biotech. Biochem.* **60**, 1265-1268.
55. Svasti, M.R. J., Srisomsap, C., Surarit, R. and Benjavongkulchai, E. (1996) Oligosaccharide Synthesis by Reversal of Plant Glycosidases from Thailand. In *Proceedings, Second Thai-French Symposium on Plant Molecular Biology*, Bordeaux, France, 6-10 October 1996, pp. 160-171.
56. Surarit, R., Matsui, H., Chiba, S., Svasti, J. and Srisomsap, C. (1997) Evidence for the Presence of a Single Active Site in β -D-Fucosidase/ β -D-Glucosidase from *Dalbergia cochinchinensis* Seeds. *Biosci. Biotech. Biochem.* **61**, 93-95.
57. Svasti, M.R. J., Srisomsap, C., Surarit, R., Champattanachai, V., Boonpuan, K., Sawangareetrakul, P., Subhasitanont, P. and Chokchaichamnankit, D. (1997) Purification and Properties of Thai Rosewood β -Glucosidase/ β -Fucosidase. In *Proceedings, Conference on Biotechnology Research and Applications for Sustainable Development* (Mongkolsuk, S., Loprasert, S. and Srifah, P., eds.), Bangkok, Thailand, pp. 1-7.
58. Wongwithoonyaporn, P., Perry, D., Surarit, R., Bucke, C. and Svasti, M.R. J. (1997) Oligosaccharide Synthesis by α -D-Mannosidases from Thai Beans. In *Proceedings, Conference on Biotechnology Research and Applications for Sustainable Development* (Mongkolsuk, S., Loprasert, S. and Srifah, P., eds.), Bangkok, Thailand, pp. 9-15.
59. Wongwithoonyaporn, P., Bucke, C., and Svasti, J. (1998) Separation and Specificity Study of α -Mannosidases from *Vigna umbellata*. *Biosci. Biotech. Biochem.* **62**, 613-621.

60. Svasti, M.R.J., Srisomsap, C., Surarit, R., Techasakul, S. and Ketudat-Cairns, J. (1998) Characterization of a Novel Rotenoid- β -Glucosidase Enzyme and its Natural Substrate from Thai Rosewood. *Proceedings, International Conference on Biodiversity and Bioresources Conservation and Utilization*. [http:// www.iupac.org/ symposium/ proceedings/ phuket97/ svasti.html](http://www.iupac.org/symposium/proceedings/phuket97/svasti.html)
61. Itchayanan, D., Svasti, J., Srisomsap, C., Winichagoon, P., and Fucharoen, S. (1999) Hb G-Coushatta [β 22(B4)Glu $\rightarrow$ Ala] in Thailand. *Hemoglobin* **23**, 69-72.
62. Svasti, J., Srisomsap, C., Techasakul, S. and Surarit, R. (1999) Dalcochinin-8'-O- β -D-Glucoside and its β -Glucosidase Enzyme from *Dalbergia cochinchinensis*. *Phytochem.* **50**, 739-743.
63. Itchayanan, D., Svasti, J., Srisomsap, C., Winichagoon, P., and Fucharoen, S. (1999) Identification of Hb J Buda [α 61(E10)Lys $\rightarrow$ Asn] in a Thai Female. *Hemoglobin* **23**, 183-186.
64. Srisomsap, C., Subhasitanont, C., Techasakul, S., Surarit, R., and Svasti, J. (1999) Synthesis of Homo and Hetero-Oligosaccharides by Thai Rosewood β -Glucosidase. *Biotechnology Letters* **21**, 947-951.
65. Svasti, J., Srisomsap, C., Winichagoon, P. and Fucharoen, F. (1999) Detection and Structural Analysis of Abnormal Hemoglobins Found in Thailand. *Southeast Asian J. Trop. Med. Pub. Health* **Vol 30, Suppl. 2**, 88-93.
66. Wasant, P., Svasti, J., Srisomsap, C., Liammongkol, S., Naylor, E., and Matsumoto, I. (1999) Inherited Metabolic Disorder in Thailand – Siriraj Experience. *Southeast Asian J. Trop. Med. Pub. Health* **Vol 30, Suppl. 2**, 124-137.
67. Surarit, R., Srisomsap, C., Wasant, P., Svasti, J., Suthatvoravut, S., Chokchaichamnankit, D. and Liammongkolkul, S. (1999) Plasma Amino Acid Analyses in Two Cases of Maple Syrup Urine Disease. *Southeast Asian J. Trop. Med. Pub. Health* **Vol 30, Suppl. 2**, 138-139.
68. Srisomsap, C., Wasant, P., Svasti, M.R. J., Chokchaichamnankit, D. and Liammongkolkul, S. (1999) Plasma Amino Acid and Urine Organic Acid Analyses of Methylmalonic Acidemia In A Thai Infant. *Southeast Asian J. Trop. Med. Pub. Health* **Vol 30, Suppl. 2**, 140-142.
69. Svasti, J., Srisomsap, C., Itchayan, D., Limwuttiwong, A., Siriboon, W., Winichagoon, P. and Fucharoen, S. (1999) Recent Studies on the Abnormal Hemoglobins Found in Thailand. *J. Chem. Soc. Pak.* **21**, 281-288.
70. Yodsowan, B., Svasti, J., Srisomsap, C., Winichagoon, P., and Fucharoen, S. (2000) Hb Siam [α 15(A13)Gly $\rightarrow$ Arg] is a GGT $\rightarrow$ CGT Mutation in the α 1-Gene. *Hemoglobin* **24**, 71-74.
71. Lirdprapamongkol, K. and Svasti, J. (2000) Alkyl Glucoside Synthesis using Thai Rosewood β -Glucosidase. *Biotechnology Letters*. **22**, 1889-1994
72. Ketudat-Cairns, J.R., Champattanachai, V., Srisomsap, C., Wittman-Liebold, B., Thiede, B., and Svasti, J. (2000) Sequence and recombinant expression of Thai Rosewood β -glucosidase/ β -fucosidase, a glycosylated family 1 glycosyl hydrolase. *J. Biochem.* **128**, 999–1008.
73. Imai, K., Tientadakul, P., Opartkiattikul, N., Luene, P., Winichagoon, P., Svasti, J. and Fucharoen, S. (2001) Detection of Haemoglobin Variants and Inference of Their Functional Properties by Complete Oxygen Dissociation Curve Measurements. *Brit. J. Haematol.* **112**, 483-7.

74. Svasti, S., Yodsowon, B., Sriphanich, R., Winichagoon, P., Boonkhan, P., Suwanban, T., Sawangareetrakul, P., Srisomsap, C., Ketudat-Cairns, J.R., Svasti, J. and Fucharoen, S. (2001) Association of Hb Hope [β 136(H14)Gly $\rightarrow$ Asp] and Hb H Disease. *Hemoglobin* **25**, 429-435.
75. Svasti, J. (2001) Bioscience and Its Impact on Developing Countries: a Thai Perspective. *EMBO Rep.* **2**, 648-650.
76. Svasti, J., Srisomsap, C., Wasant, P., Pangkanon, S., Tiensuwan, M., Boonpuan, K., Sawangareetrakul, P. and Liammongkolkul, S. (2001) Normal Plasma Free Amino Acid Levels in Thai Children. *J. Med. Assoc. Thailand.* **84**, 1558-1568.
77. Arthan, D., Svasti, J., Kittakoo, P., Pittayakhachonwut, D., Tanticharoen, M., and Thebtaranonth, Y. (2002) Antiviral isoflavonoid sulfate and steroidal glycosides from the fruits of *Solanum torvum*. *Phytochemistry* **59**, 459-463.
78. Turbpai boon, C., Svasti, S., Sawangareetrakul, P., Winichagoon, P., Srisomsap, C., Siritanaratkul, N., Wilairat, P., and Svasti, J. (2002) Hb Siam [α 1-15(A13)Gly(GGT) $\rightarrow$ Arg(CGT)] is a typical alpha hemoglobinopathy without alpha thalassemic effect. *Hemoglobin* **26**, 77-81.
79. Sawangareetrakul, P., Svasti, S., Yodsowon, B., Winichagoon, P., Srisomsap, C., Svasti, J., and Fucharoen, S. (2002) Double Heterozygosity for Hb Pyrgos [β 83(EF7) Gly $\rightarrow$ Asp] and Hb E [β 26(B8)Glu $\rightarrow$ Lys] Found in Association with α -Thalassemia. *Hemoglobin*. **26**, 191-196.
80. Srisomsap, C., Subhasitanont, P., Otto, A., Mueller, E.-C., Punyarit, P. Wittmann-Liebold, B. and Svasti, J. (2002) Detection of Cathepsin B Up-Regulation in Neoplastic Thyroid Tissues by Proteomic Analysis. *Proteomics*. **2**, 706-712.
81. Wasant, P., Svasti, J., Srisomsap, C., Liammongkolkul, S., and Ratanarak, P., (2002) Inherited Metabolic Disorders in Thailand. *J. Med. Assoc. Thailand* **85**, Suppl 2, S700-9.
82. Wasant, P., Srisomsap, C., Liammongkolkul, S. and Svasti, J. (2002) Urea cycle disorders in Thai infants: a report of 5 cases. . *J. Med. Assoc. Thailand* **85**, Suppl 2, S720-31.
83. Chaiyen, P., Suadee, C., Thotsaporn, K. & Svasti, M.R. J. (2002) Studies of the Two-Component *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*, in *Flavins & Flavoproteins*, (Eds: Chapman, S., Perham, R., and Scrutton, N.), Rudolf Weber, Berlin, 975-980.
84. Ngiswara, L., Srisomsap, C., Winichagoon, P., Fucharoen, S. and Svasti, J. (2003) Hb Kodaira II [β 146(HC3)His $\rightarrow$ Gln] Detected In Thailand. *Hemoglobin* **27**, 37-39.
85. Lirdprapamongkol, K., Mahidol, C., Thongnest, S., Prawat, H., Ruchirawat, S., Srisomsap, C., Surarit, R., Punyarit, P., and Svasti, J. (2003) Anti-metastatic Effects of Aqueous Extract of *Helixanthera parasitica*. *J. Ethnopharmacology* **86**, 253-256.
86. Svasti, J., Phongsak, T., Sarnthima, R. (2003) Transglucosylation of Tertiary Alcohols using Cassava β -Glucosidase. *Biochem. Biophys. Res. Commun.* **305**, 470-475.
87. Champattanachai, V., Ketudat Cairns, J.R., Shotelersuk, V., Keeratichamroen, S., Sawangareetrakul, P., Srisomsap, C., Kaewpaluek, V. and Svasti, J. (2003) Novel mutations in a Thai patient with methylmalonic acidemia. *Molec. Genet. Metab.* **79**, 299-301.
88. Opassiri, R., Ketudat Cairns, J.R., Akiyama, T., Wara-Aswapati, O., Svasti, J. and Esen, E. (2003) Characterization of a rice β -glucosidase highly expressed in flower and germinating shoot. *Plant Science* **165**, 627-638.

89. Srisomsap, C., Sawangareetrakul, P., Subhasitanont, P., Panichakul, T., Keeratichamroen, S., Lirdprapamongkol, K., Chokchaichamnankit, D., Sirisinha, S. and Svasti, J. (2004) Proteomic Analysis of Cholangiocarcinoma Cell Line. *Proteomics* **4**, 1135-1144.
90. Ngiwsara, L., Srisomsap, C., Winichagoon, P., Fucharoen, S. and Svasti, J. (2004) Two Cases of Compound Heterozygosity for Hemoglobin Hekinan [$\alpha(27)$; Glu-Asp] and α -Thalassemia in Thailand. *Hemoglobin* **28**, 145-150.
91. Opassiri, R., Hua, Y., Wara-Aswapati, O., Akiyama, T., Svasti, J., Esen, A. and Ketudat Cairns, J.R. (2004) β -Glucosidase, exo- β -glucanase and pyridoxine transglucosylase activities of rice BGlu1. *Biochem. J.* **379**, 125-131
92. Chaiyen, P., Sucharitakul, J., Svasti, J., Entsch, B., Massey, V. and Ballou, D.P. (2004) Use of 8-Substituted-FAD Analogs to Investigate the Hydroxylation Mechanism of the Flavoprotein 2-Methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase. *Biochemistry* **43**, 3933-3943.
93. Suginta, W., Songsiriritthigul, C., Prinz, H., Estibeiro, P., Duncan, R.R., Svasti, J. and Fothergill-Gilmore, L.A. (2004) An endochitinase A from *Vibrio carchariae*: cloning, expression, mass and sequence analyses, and chitin hydrolysis. *Arch. Biochem. Biophys.* **424**, 171-180.

B. Science Education and Educational Research at International Level

1. Svasti, J. and Panijpan, B. (1977) SDS-Polyacrylamide Gel Electrophoresis: a simple explanation of why it works. *J. Chem. Ed.* **54**, 560-562.
2. Svasti, J. (1979) What is the Function of LDH Isozymes: doubts concerning validity of aerobic- anaerobic theory. *Trends in Biochem. Sci.* **4**, N133-134.
3. Svasti, J. (1980) Automated Amino Acid Analysis Comes of Age: but textbooks errors persist. *Trends in Biochem. Sci.* **5**, January, VIII- IX.
4. Svasti, J. (1980) A Simple Laboratory Experiment in Biochemistry: The activation and inactivation of sulphhydryl and aspartate proteases. *Biochem. Ed.* **8**, 11-15.
5. Svasti, J. (1989) Activation and Inactivation of Sulphydryl and Aspartate Proteases. In *Practical Biochemistry for Colleges* (Wood, E.J., ed.), Pergammon Press, Oxford, pp. 9-11.
6. Svasti, J. and Surarit, R. (1991) Biochemical Education in Thailand: Past, Present and Future. *Biochem. Educ.* **19**, 129-135.
7. Svasti, J. and Surarit, R. (1992) A Survey of Introductory Biochemistry Courses at Thai Universities. *Biochem. Educ.* **20**, 204-209
8. Surarit, R., Benjavongkulchai, E. and Svasti, J. (1994) A Laboratory Experiment Illustrating Tooth Decay. *Biochem. Educ.* **22**, 45-47.
9. Svasti, J. and Surarit, R. (1994) Biochemical Education and Curricula in Thailand. *Chemistry in Transition: Proceedings, 12th International Conference on Chemical Education*, pp. 84-88, Bangkok, Thailand.

C. Editorials, Reviews and Other Academic Articles

1. Svasti, M.R. J. (1981) Tenth Anniversary of the Federation of Asian and Oceanian Biochemists (FAOB) *J. Sci. Soc. Thailand* **7**, 133-135.
2. Svasti, M.R. J. (1985) Principles of Biochemical Separation. In *Proceedings, Workshop on "The Separation of Biochemical Compounds"*, pp. 1-17, Srinakharinvirot University, Bangkok. In Thai.

3. Svasti, M.R. J. (1985) Strategies in the Separation of Biochemical Compounds. In *Proceedings, Workshop on "The Separation of Biochemical Compounds"*, pp.113-126, Srinakharinvirot University, Bangkok. In Thai.
4. Svasti, M.R. J. and Boontrakulpoontawee, P. (1985) Abnormal Hemoglobins. *Science Magazine*, **39**, 491-501. In Thai.
5. Svasti, M.R. J. (1986) Enzymes Used in the Cutting and Joining of DNA. *Proceedings, Workshop on "Basic Techniques in Genetic Engineering"*, pp. 65-80, Khon Khaen University. In Thai.
6. Svasti, M.R. J. (1985) A Call for Papers. *J. Sci. Soc. Thailand* **11**, 1-3.
7. Svasti, M.R. J. (1985) Integrity and Judgement in Science. *J. Sci. Soc. Thailand* **11**, 141-145.
8. Svasti, M.R. J. (1986) Scientific Cooperation through Societies, Federations and Unions: some experiences from the biochemical community in Thailand. *J. Sci. Soc. Thailand* **12**, 119-125.
9. Svasti, M.R. J. (1987) The Properties of Enzymes. In *Proceedings, Workshop on "Enzymes and Their Applications"*, pp. 1-28, Mahidol University, Bangkok. In Thai.
10. Svasti, M.R. J. (1987) Academic Positions and Careers in Science at Thai Universities. *J. Sci. Soc. Thailand* **13**, 63-69.
11. Svasti, M.R. J. (1987) A Theory of Circum-motion. *J. Sci. Soc. Thailand* **13**, 185-188.
12. Svasti, M.R. J. (1988) The Properties and Mechanism of Action of Enzymes. *Science Magazine* **41**, 333-340. In Thai.
13. Svasti, M.R. J. (1989) Improved Quality of Life for the Mentally Retarded. *J. Pediat. Soc. Thailand* **28**, 993-998.
14. Svasti, M.R. J. (1990) The Teaching of Biochemistry in Thailand. In *Proceedings, Workshop on "More Efficient Teaching of Biochemistry"*, pp. 1-16, Sukhothai Thammaritaj University, Bangkok
15. Svasti, J. and Surarit, R. (1992) Survey of the Content of Biochemistry Courses Presently Being Taught at Tertiary Level. In *Proceedings, Workshop on "Strategies for Developing Curriculum and Teaching in Biochemistry"*, pp. 36-58, Srinakharinvirot University Prasarnmitr, Bangkok. In Thai.
16. Surarit, R. and Svasti, J. (1994) Enzymes in Daily Life. *Sukhothai Thammaritaj Open University Journal*. **7**, 38-44. In Thai.
17. Svasti, M.R.J. (1996) To Be or Not To Be: That is the Question. *Mahidol Univ. J.* **3**, 151-152.
18. Svasti, M.R. J. (1998) International Relations at Mahidol University. *Mahidol Univ. J.* **5**, 77-83.

D. Textbooks and Guidebook

1. Svasti, M.R. J. (1978) in *Laboratory Experiments and Basic Concepts in Biochemistry* (Rungruangsak, K. and Svasti, M.R. J., eds.), Amarin Press, Bangkok. In Thai.
 Chapter 1: Composition and Functions of Cells (pp. 1-17)
 Chapter 6: Amino Acids and Proteins (pp. 172-223)
 Chapter 7: Enzymes (pp. 224-269)

2. *Svasti, M.R. J. (1987) in Biochemistry, 2530, Third Revised Edition (Chulavatnatol, M., ed.), Sor Sor Ltd., Bangkok.. In Thai.*
Chapter 6: Amino Acids and Proteins (pp. 107-145)
Chapter 7: Enzymes and Biochemical Reactions (pp. 147-174)
Chapter 8: Assembly of Biomolecules (pp. 175-188)
3. *Svasti, M.R. J. (1999) in Biochemistry, 2542, Fourth Revised Edition (Chulavatnatol, M., and Komaratat, P., eds.), ISBN 974-86639-8-1, Jirrus Printing Ltd, Bangkok.*
Chapter 6: Amino Acids and Proteins (pp. 89-123)
Chapter 7: Enzymes and Biochemical Reactions (pp. 125-150)
Chapter 8: Assembly of Biomolecules (pp. 151-161)
4. *Svasti, M.R.J., Suwanchinda, B. and Phruthonkul, S. (eds.) (1999) Guidebook for Speech Writing. ISBN 974-663-059-8.*

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Nature of Work:

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1. Biochemical aspects of oral biology: e.g. effects of betel-nut extracts and Thai medicinal herbs on oral bacteria and fungi, effects of drugs and medicinal plants on cultured human oral cell lines, keratin polypeptide patterns in relation to oral cancer, enzymatic tests for periodontitis.
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Professional Societies:

Science Society of Thailand
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International Association for Dental Research
Japanese Society for Bioscience, Biotechnology and Agrochemistry

Other Activities:

- Member, Faculty Research Committee, Faculty of Dentistry (1989-present)
- Committee Member, Biochemical Section, Science Society of Thailand (1988-9)
- Member, Selection Subcommittee for Graduate Student Fellowships, Memorial Foundation for H.M. King Prajadhipok and H.M. Queen Rambhai Barni
- Recipient of FAOB Travel Fellowship to attend 5th FAOB Congress, Seoul, Korea, August 1989
- Recipient of Thai-UK Biotechnology Fellowship to do research on "carbohydrate enzymes of cariogenic bacteria" at Polytechnic of Central London, United Kingdom (January-June 1990)
- Travel Fellowship to attend AMBO Training Course on *Cell Culture Techniques*, Osaka, Japan, March 1990.
- Recipient of IUB Travel Fellowship to attend IUB Congress, Jerusalem, Israel, August 1991
- Travel Fellowship to attend Third International Symposium on Protein Structure-Function Relationship Karachi, Pakistan 1993.
- Japan Society for the Promotion of Science-National Research Council of Thailand Fellowship to perform biotechnology research at Hokkaido University, August-September 1994.
- Assistant Dean for Research, Faculty of Dentistry, Mahidol University (1993-1997)
- Member of Organising Committee and Chairman, Facilities Subcommittee, Eleventh Symposium of the Federation of Asian and Oceanian Biochemists and Molecular Biologists, November 1994
- Secretary, Academic and Research Committee, Dental Faculties Board of Thailand, 1995-present
- Deputy Chairman, Department of Physiology and Biochemistry, Faculty of Dentistry, Mahidol University, 1996- present
- Member of Organising Committee, International Association for Dental Education - Southeast Asian Division Annual Meeting, 1996
- Secretary, Biochemical Section of the Science Society of Thailand, 1996-1997
- Deputy Chairman, Biochemical Section of the Science Society of Thailand, 1998-present
- Assistant to the President for Research and Academic affairs, Mahidol University, 2000-2003

List of Publications:

1. Svasti, J., Kurosky, A., Bennett, A., *Surarit*, R. and Bowman, B.H. (1979) Structure and Properties of Human Plasma Vitamin D Transport Protein (Group specific Component). In *Vitamin D Basic Research and Its Clinical Applications* (Norman, A.W. *et al.*, eds.), pp.149-152, Walter de Gruyter & Co., Berlin.
2. *Surarit*, R. and Svasti, J. (1980) Effect of Ligand Binding on the Conformation of Human Plasma Vitamin D Binding Protein (Group-specific Component). *Biochem. J.* **191**, 401-410.

3. Surinrut, P., Svasti, J. and Surarit, R. (1981) Improved Purification and Fluorescence Changes upon Activation of Human Seminal Plasma Acidic Protease. *Biochim. Biophys. Acta.* **659**, 38- 47.
4. Surarit, R. and Svasti, J. (1982) Human Vitamin D Binding Protein: conformation and structure. *Vitamin D, Chemical, Biochemical and Clinical Endocrinology of Calcium Metabolism* (A.W. Norman et al, eds), pp. 1187-1190, Walter de Gruyter and Co., Berlin & New York.
5. Shepherd, M.G., Surarit, R., Gopal, P.K. and Sullivan, P.A. (1984) Cell Wall Metabolism of α -1,3- and α -1,6-Glucan of *Candida albicans*. In *Microbial Cell Wall Synthesis* (Nombela, C. ed.), Amsterdam.
6. Hubbard, M.J., Surarit, R., Sullivan, P.A. and Shepherd, M.G. (1986) The Isolation of Plasma Membrane and Characterisation of the Plasma Membrane ATPase from the Yeast *Candida albicans*. *Eur. J. Biochem.* **154**, 375-381.
7. Surarit, R. and Shepherd, M.G. (1987) The Effects of Azole and Polyene Antifungals on the Plasma Membrane Enzymes of *Candida albicans*. *J. Med. Vet. Mycol.* **25**, 403-413.
8. Surarit, R., Gopal P.K. and Shepherd, M.G. (1988) Evidence for a Glycosidic Linkage between Chitin and Glucan in the Cell Wall of *Candida albicans*. *J. Gen. Microbiol.* **134**, 1723-1730.
9. Surarit, R. (1990) *Candida albicans*: Clinical Significance and Research Trends. *Mahidol Dent. J.* **10**, 160-167.
10. Svasti, J. and Surarit, R. (1991) Biochemical Education in Thailand: Past, Present and Future. *Biochemical Education* **19**, 129-135.
11. Promsudthi, A., Kasetsuwan, J. and Surarit, R. (1991) The Use of Phenol Red for Study of Myeloperoxidase Enzyme in Gingival Crevicular Fluid of Adult Periodontitis and Juvenile Periodontitis. *Mahidol J. Dent.* **11**, 142-148.
12. Weerapradist, W., Punyasingh, K., Bhhuvanich, V. and Surarit, R. (1991) Toxicity of Arsenic on Skin and Oral Tissues. *Mahidol J. Dent.* **11**, 165-172.
13. Svasti, J. and Surarit, R. (1992) A Survey of Introductory Biochemistry Courses at Thai Universities. *Biochem. Ed.* **20**, 204-209.
14. Kuphasuk, Y., Kasetsuwan, J. and Surarit, R. (1993) Effectiveness of Herbal Dentifrice to Gingival Inflammation and Microorganisms Ratio in Periodontal Disease. *J. Dent. Assoc. Thai* **43**, 29-36.
15. Svasti, J., Srisomsap, C., Siriboon, W., Fucharoen, S., Winichagoon, P. and Pranit Pravatmuang, P. and Surarit, R. (1993) The Structure of Abnormal Hemoglobins in Thailand. In *Recent Advances in Molecular and Biochemical Research on Proteins* (Wei, Y.-H., Chen, C.-S. and Su, J.-C., eds), World Scientific Press, Singapore, pp. 197-200.
16. Svasti, J., Surarit, R., Srisomsap, C., Pravatmuang, P., Wasi, P., Fucharoen, S., Blouquit, Y., Galacteros, F., and Rosa, J. (1993) Identification of Hb Anantharaj [α 11(A9)Lys $\rightarrow$ Glu] as Hb J- Wenchang-Wuming [α 11(A9)Lys $\rightarrow$ Gln]. *Hemoglobin* **17**, 453-455.

17. Koontongkaew, S., *Surarit*, R. and Phantumvanit, P. (1993) Effect of an Anticalculus Toothpaste containing Pyrophosphate on Pyrophosphatase Activity and the State of Calcium Phosphate in Saliva. *J. Nihon Univ. Sch. Dent.* **35**, 85-90.
18. Svasti, J., Boontrakulpoontawee, P., Yongsuwan, S., Sarikaputi, M., Siriboon, W., Srisomsap, C., Fucharoen, S., Winichagoon, P., Pravatmuang, P., and *Surarit*, R. (1994). Structural Analysis of Proteins in Thailand: Identification of abnormal hemoglobins. *Pure & Appl. Chem.* **66**, 105-110.
19. *Surarit*, R., Benjavongkulchai, E. and Svasti, J. (1994) A Laboratory Experiment on Dental Caries. *Biochem. Ed.* **22**, 45-47
20. *Surarit*, R. and Svasti, M.R. J. (1994) Enzymes in Daily Life (In Thai). *Sukhothai Thammathiraj Open University Journal* **7**, 38-44.
21. Svasti, J. and *Surarit*, R. (1994) Biochemical Education and Curricula in Thailand. *Chemistry in Transition: Proceedings, 12th International Conference on Chemical Education*, pp. 84-88.
22. Thangnipon, W., Haruthaithanasan, P., Phanviriyapong, S., Thangnipon, W., and *Surarit*, R. (1994) Effects of Organophosphate and Carbamate Insecticides on the Nervous System in Thai Farmers. *Mahidol Univ. J.* **1**, 6-14.
23. *Surarit*, R., Svasti, M.R. J., Srisomsap, C., Suginta, W., Khunyoshyeng, S., Nilwarangkoon, S., Harnsakul, P. and Benjavongkulchai, E. (1995) Possible Use of Glycosidase Enzymes from Thai Plant Seeds for Oligosaccharide Synthesis. *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, pp. 251-255.
24. Khunyoshyeng, S., Srisomsap, C., Champattanachai, V., Boonpuan, K., Sawangareetrakul, P., *Surarit*, R. and Svasti, M.R.J. (1995) Purification and Properties of β -D-Glucosidase / β -D-Fucosidase from *Dalbergia cochinchinensis* Pierre. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, 246-250.
25. Srisomsap, C., Khunyoshyeng, S., *Surarit*, R. and Svasti, M.R.J. (1995) Studies of Oligosaccharide Synthesis by Enzymes from *Dalbergia cochinchinensis* Pierre. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, 241-245.
26. Benjavongkulchai, E., *Surarit*, R., Bucke, C., and Svasti, M.R. J. (1995) Glucosyl Acceptors of Dextranucrase from *Streptococcus mutans*. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. *et al.*, eds.), Samakkhisan Public Co. Ltd., Bangkok, 230-234.
27. *Surarit*, R., Svasti, M.R.J., Srisomsap, C., Suginta, W., Khunyoshyeng, S., Nilwarangkoon, S., Harnsakul, P., and Benjavongkulchai, E. (1995) Screening of Glycohydrolase Enzymes in Thai Plant Seeds for Potential Use in Oligosaccharide Synthesis. *J. Sci. Soc. Thailand.* **21**, 293-303.
28. *Surarit*, R., Koontongkaew, S. and Thaweeboon, T. (1995) Inhibitory Effect of Betel-nut Extract on Growth, Acid production and Dehydrogenase Enzyme of *Streptococcus mutans*. *J. Dent. Assoc Thai* **45**, 125-129.
29. *Surarit*, R., Sa-nguansin, S., and Bruranathananukij, B. (1995) Oral candidosis in rat in relation to nutritional status. *J.Dent. Res.* **74**, 446.

30. Karnchanakom, S., Buajeeb, W., Surarit, R. and Thaweeboon, B. (1995) Effect of antifungal drugs on adherence of *Candida albicans*. *J.Dent. Res.* **74**, 447.
31. Doung-Udomdacha S., Surarit R., Petmitr, S., and Thaweeboon, B. (1995) Detection of *Porphyromonas gingivalis* PCR technique using fimbrial gene primers. . *J.Dent. Res.* **74**, special issue ; 508.
32. Authayapamonvat, S., Rittapai, A., Waikakul, A., and Surarit, R. (1995) Cytotoxicity assessment of local produced amalgam in Thailand. . *J.Dent. Res.* **74**, special issue; 555.
33. Svasti, J., Srisomsap, C., Surarit, R., Benjavongkulchai, E., Suginta, W., Khunyoshyeng, S., Champattanachai, V., Nilwarangkoon, S. and Rungvirayudx, S. (1996) Potential Applications of Plant Glycohydrolases for Oligosaccharide Synthesis. In *Protein Structure Function Relationship*, Zaidi, Z. H. and Smith, D. L. eds Plenum Press pp. 249-257.
34. Srisomsap, C., Svasti, M.R. J., Surarit, R. , Champattanachai, V., Boonpuan, K., Sawangareetrakul, P., Subhasitanont, P. and Chokchaichamnankit, P. (1996) The Purification and Characterization of β -D-Glucosidase/ β -D-Fucosidase from *Dalbergia cochinchinensis* Pierre. *J. Biochem. (Tokyo)* **119**, 585-590.
35. Benjavongkulchai, E., Surarit, R., Bucke, C. and Svasti, J. (1996) Synthesis of oligosaccharide by dextransucrase from a local strain of *Streptococcus mutans*. *J Sci Soc Thailand* **22**, 105-110.
36. Surarit, R., Matsui, H., Chiba, S., Svasti, J. and Srisomsap, C. (1996) Chemical Modification Of β -Glucosidase/ β -Fucosidase from *Dalbergia Cochinchinensis* Pierre by Conduritol B Epoxide. *Biosci. Biotech. Biochem.* **60**, 1265-68.
37. Svasti, M.R.J., Srisomsap, C. Surarit, R. and Benjavongkulchai, E. (1996) Oligosaccharide synthesis by reversal of plant glycosidases from Thailand. In *Proceedings second Thai-French Symposium on Plant Molecular Biology*, Bordeaux, France 6-10 October 1996, pp 160-171.
38. Petmitr, S., Doung-Udomdacha, S. and Surarit R (1996) Enhanced Sensivity of PCR detection for *Porphyromonas gingivalis* Using Microwave-Based DNA preparation *Asia Pacific J. Mol. Biol. Biotech.* **4**, 210-212
39. Vongsurasit, T., Surarit, R. and Autayapamornwat, S. (1996) Cytotoxicity Determination of Rubber Dam Using Neutral Red Absorption in L929 Mouse Fibroblast. *Mahidol Dental J.* **16**, 113-117.
40. Vongsurasit, T., Surarit, R. and Autayapamornwat, S. (1996) Comparative Study the Cytotoxicity of Three Kind of Rubber Sheath Using Neutral Red Absorption in Mouse Fibroblast. *Mahidol Dental J.* **16**, 152-156.
41. Karnchanakom, S., Buajeeb, W., Surarit R. and Thaweboon B. (1996) Effect of Antifungal Agents on Adherence of *Candida albicans* to Buccal Epithelial Cells. *Dental Journal of the Department of Medical Service* **3**, 4-12.
42. Surarit, R., Matsui, H., Chiba, S., Svasti , J. and Srisomsap, C. (1997) Evidence for the Presence of a Single Active Site in β -D-Fucosidase/ β -D-Glucosidase from *Dalbergia cochinchinensis* Seeds. *Biosci. Biotech. Biochem.* **61**, 93-95.
43. Medhanavyn, P., Nakornchai, S. and Surarit, R. (1997) Free Fluoride Content of Ready-to-feed Milk. *J. Dent. Assoc. Thailand* **47**, 255-259

44. Svasti, M.R. J., Srisomsap, C., *Surarit*, R., Champattanachai, V., Boonpuan, K., Sawangareetrakul, P., Subhasitanont, P. and Chokchaichamnankit, D. (1997) Purification and Properties of Thai Rosewood β -Glucosidase/ β -Fucosidase. In *Proceedings, Conference on Biotechnology Research and Applications for Sustainable Development* (Mongkolsuk, S., Loprasert, S. and Srifah, P., eds.), Bangkok, Thailand, pp. 1-7.
45. Laohapand, P., *Surarit*, R., Ruxrungtham, K., and Suwatanapongched, P. (1997) Relationship between crevicular interleukin 1 β and periodontal activity in Thailand. *J. Dent. Res.* 76; Special issue; 440.
46. Nakornchai, S., *Surarit*, R. and Sirikul, V. (1998) Fluoride content of ready to feed milk. *J. Dent. Assoc. Thai.* 48; 348-355.
47. Svasti, J., Srisomsap, C., Techasakul, S. and *Surarit*, R. (1999) Dalcochinin-8'-O- β -D-Glucoside and its β -Glucosidase Enzyme from *Dalbergia cochinchinensis*. *Phytochem.* **50**, 739-743.
48. Svasti, M.R.J., Srisomsap, C., *Surarit*, R., Techasakul, S. and Ketudat-Cairns, J. (1999) Characterization of a Novel Rotenoid- β -Glucosidase Enzyme and its Natural Substrate from Thai Rosewood. *Proceedings, International Conference on Biodiversity and Bioresources Conservation and Utilization*. <http://www.iupac.org/symposium/proceedings/phuket97/svasti.html>
49. Nakornchai, S. and *Surarit*, R. (1999) The effect of various topical fluoride preparations on caries like lesion. *J. Dent. Assoc. Thai.* 49; 295-330.
50. Srisomsap, C., Subhasitanont, P., Techasakul, S., *Surarit*, R., and Svasti, J. (1999) Synthesis of homo- and hetero-oligosaccharides by Thai rosewood β -Glucosidase. *Biotechnology Letters* 21; 947-951.
51. Palangsak, S., *Surarit*, R., Petmitr, S., Thaweboon, B. and Weerapradist, W. (1999) Detection of *Prevotella intermedia* by PCR. *J. Dent. Res.* 78; Special issue; 426.
52. Chandrapho, N., Laohapand, P., *Surarit*, R., Petmitr, S., and Thaweboon, B. (1999) Relationship between *Porphyromonas gingivalis* and periodontal status in Thai patients. *J. Dent. Res.* 78; Special issue, 426.
53. *Surarit*, R., Srisomsap, C., Wasant, P., Svasti, J., Suthavoravut, U., Chokchaichamnankit, D. and Liammongkolkul, S. (1999) *Southeast Asian J. Trop. Med. Pub. Health* 30 Suppl. 2; 138-139.
54. Vajrabhaya, L., Jaturabundit, W. and *Surarit*, R. (2000) Effect of Thai Milk Products on the viability of PDL cells. *J. Dent. Assoc. Thai.* 50; 203-209.
55. Chuckpaiwong, S. Nakornchai, S. *Surarit*, R., Soo-ampon S. and Kasetsuwan, R. (2000) Fluoride in water consumed by children in remote areas of Thailand. *Southeast Asian J. Trop. Med. Pub. Health* 31: 319-324.
56. Chuckpaiwong, S. Nakornchai, S., *Surarit*, R. and Soo-ampon S. (2000) Dietary fluoride intake of children aged 3-7 years in remote areas of Thailand. *Southeast Asian J. Trop. Med. Pub. Health* 31: 579-582.
57. Chuckpaiwong, S. Nakornchai, S., *Surarit*, R. and Soo-ampon S. (2000) Fluoride analysis of milk in remote areas of Thailand. *Southeast Asian J. Trop. Med. Pub. Health* 31: 583-586.

58. Suwatanapongched, P., Laohapand, P., Surarit, R. and Ruxrungtham, K. (2000) Interleukin 1 β level in gingival crevicular fluid of patients with active periodontitis. *Asian Pacific J. Allergy Immunol.* 18 (4): 201-207.
59. Buajeeb, W., Ohyama, H., Zhang, X., Surarit, R. and Wong, D. (2001) Use of the two-hybrid system to search for p12^{Doc-1} interacting protein. *J. Dent. Res.* 80; Special issue; 669.
60. Permpilboon, A., Nisalak, P., Surarit, R. Jaochakarasiri, P. and Kaewsuriyathumrong, C. (2001) Failure of brackets and fluoride release from different bonding system. *J. Dent. Res.* 80; Special issue; 709.
61. Thaweboon, S., Chunhabundit, P., Surarit, R., Swasdison S. (2001) Effect of lead on human dental pulp cells *in vitro*. *J. Dent. Res.* 80; Special issue; 796.
62. Sanguansin, S., Surarit, R., Weerapradist, W., Petmitr, S. and Punyarit, P. (2002) Mutational analysis of hMSH2 gene in oral SCC. *J. Dent. Res.* 81; Special issue; A-263.
63. Boonsaeng, P., Vongsavan, K., Surarit, R., Amornchat, C. and Jitrapakdee, S. (2002) Detection of *Streptococcus mutans* and *Streptococcus sorbrinus* by multiplex PCR. *J. Dent. Res.* 81; Special issue; A-466.
64. Thaweboon, S., Chunhabundit, P., Surarit, R., Swasdison, S. and Suppukpatana, P. (2002) Effects of lead on the proliferation, protein production, and osteocalcin secretion of human dental pulp cells *in vitro*. *Southeast Asian J. Trop. Med. Pub. Health* 33: 654-661.
65. Lirdprapamongkol K, Mahidol C, Thongnest S, Prawat H, Ruchirawat S, Srisomsap C, Surarit R, Punyarit P and Svasti J. (2003) Anti-metastatic effects of aqueous extract of helixanthera parasitica. *J Ethnopharmacol.* 86(2-3):253-6.
66. Rirattanapong, R, Vongsavan, K, Surarit R, and Juanarongrit, N. (2003) Effect of fluoride mouthrinse on mineralization of enamel lesion: in vitro study *J. Dent. Assoc. Thai.* 53: 229-237.
67. Buajeeb, W, Zhang, X, Ohyama H, Han, D, Surarit, R, Kim, Y and Wong DT. (2004) Interaction of the CDK2 associated protein-1, p12^{DOC-1/CDK2AP1}, with its homolog, p14^{DOC-1R} *Biochem Biophys Res Comm.* 315(4); 998-1003
68. Nakornchai, S, Atsawasuwan, P, Kitamura, E, Surarit, R and Yamauchi, M. (2004) Partial biochemical characterisation of collagen in carious dentin of human primary teeth *Arch. Oral Biol.* In Press
69. Nakornchai, S, Harnirattisai, C, Thiladilok, S. and Surarit, R. (2004) Microtensile bond strength of two adhesives to caries-affected dentin of primary teeth. *J. American Dent.Assoc.* In Press.

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2. Opassiri R, Ketudat Cairns JR, Akiyama T, Wara-Aswapati O, Svasti J, and Esen A. Characterization of a rice β -glucosidase genes highly expressed in flower and germinating shoot (2003) *Plant Science* 165, 627-638. Impact factor 1.56 (ISI 2002)
3. Kaomek M, Mizuno K, Fujimua T, Sriyotha P, Ketudat Cairns JR. 2003. Cloning, Expression and Characterization of an Anti-Fungal Chitinase from *Leucaena leucocephala* de Wit. *Bioscience, Biotechnology and Biochemistry* 67, 667-676. Impact factor 0.97 (ISI, 2001)
4. Champattanachai V, Ketudat Cairns, JR, Shotelersuk V, Kerratichamreon S, Sawangareetrakul P, Srisomsap C, Kaewpaluek V, Svasti J. 2003. Novel Mutations in a Thai patient with methylmalonic acidemia. *Molecular Genetics and Metabolism* 79, 300-302. Impact factor 2.35 (ISI 2001)
5. Svasti S, Yodsowon B, Sriphanich R, Winichagoon P, Boonkhan P, Suwanban T, Sawangareetrakul P, Srisomsap C, Ketudat-Cairns J, Svasti J, Fucharoen S. 2001. Association of Hb Hope [β 136(H14)Gly $\rightarrow$ Asp] and Hb H Disease. *Hemoglobin* 25, 429-435. Impact factor 0.40 (ISI 2001)
6. Ketudat Cairns JR, Champattanchai V, Srisosap C, Thiede B, Wittman-Liebold B, Svasti J. 2000. Sequence and Expression of Thai Rosewood -Glucosidase/ -Fucosidase, a Family 1 Glycosyl Hydrolase Glycoprotein. *Journal of Biochemistry* 128, 999-1008. Impact factor 1.99 (ISI 2001)
7. Ketudat Cairns, J.R., Chantrarangsee, M., Chaiwangrad, S., Phawong, J. (1999) Primary Structure-Based Screening for Glycosyl Hydrolases in Thai Plants. *Thai Journal of Biotechnology* **1**: 19-30.
8. Cairns, J. R. and P.A. Price. (1994) "Direct Demonstration That the Vitamin K-Dependent Bone Gla Protein Is Incompletely γ -Carboxylated in Humans" *Journal of Bone and Mineral Research* **9**, 1989-1997.
9. Cairns, J. R., M. K. Williamson, and P. A. Price (1991) "Direct Identification of -Carboxyglutamic Acid in the Sequencing of Vitamin K-Dependent Proteins" *Analytical Biochemistry* **199**, 93-97.



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3. Siripurkpong P., Yuwaniyama J., Wilairat P., Goldberg D.E. (2002) Active Site Contribution to Specificity of the Aspartic Proteases Plasmepsins I and II. *J Biol Chem* 277(43), 41009–41013.
4. Wattanarangsarn, J., Chusacultachai, S., Yuwaniyama, J., Kamchonwongpaisan, S., Yuthavong, Y. (2003) Effect of N-terminal truncation of *Plasmodium falciparum* dihydrofolate reductase on dihydrofolate reductase and thymidylate synthase activity. *Mol Biochem Parasitol.* 126 (1), 97–102.
5. Yuwaniyama, J., Chitnumsub, P., Kamchonwongpaisan, S., Vanichtanankul, J., Sirawaraporn, W., Taylor, P., Walkinshaw, M. and Yuthavong, Y. (2003) Insights into antifolate resistance from malarial DHFR-TS structures. *Nat Struct Biol.* 10(5), 357–365.
6. Chitnumsub, P., Yuwaniyama, J., Vanichtanankul, J., Kamchonwongpaisan, S., Walkinshaw, M.D. and Yuthavong, Y. (2004) Characterization, crystallization and preliminary X-ray analysis of bifunctional dihydrofolate reductase-thymidylate synthase from *Plasmodium falciparum*. *Acta Cryst D* 60, 780–783; erratum in *Acta Cryst D* 60, 1185.

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Publications:

1. J.A. Haugen, P. Kongsaree, J. Clardy and S. Liaaen-Jensen. Total synthesis of acetylenic carotenoids. *Tetrahedron: Asymmetry* (1994), 7, 1367-1372.
2. S. Kamchongwongpaisan, C. Nilanonta, B. Tarnchompoo, C. Thebtaranonth, Y. Thebtaranonth, Y. Yuthavong, P. Kongsaree and J. Clardy. Antimalarial peroxide from *Amonum krervanh* Pierre. *Tetrahedron Letters*. (1995), 36, 1821.
3. J.I. Luengo, D.S. Yamashita, D. Dunnington, A. Konialian-Beck, L.W. Rozamus, H. Yen, M.J. Bossard, M.A. Levy, A. Hand, T. Newman-Tarr, A. Badger, L. Faucette, R.K. Johnson, K. D'Alessio, T. Porter, A.Y.L. Shu, R. Heys, J. Choi, P. Kongsaree, J. Clardy and D.A. Holt. Structure-activity studies of rapamycin analogs: evidence that the C-7 methoxy is part of the effector domain and positioned at the FKBP12/FRAP interface. *Chemistry and Biology*. (1995), 2, 3471-3481.
4. S. Zhang, P. Kongsaree, J. Clardy, D.B. Wilson and B. Ganem. Site-directed mutagenesis of monofunctional chorismate mutase engineered from the *E. coli* P-Protein. *Bioorganic & Medicinal Chemistry*. (1996), 4, 7, 1015-1020.
5. A. Baramée, J. Clardy, P. Kongsaree, S. Rajviroongit, C. Thebtaranonth and Y. Thebtaranonth. Anions of chalcone-epoxide. *J. Chem. Soc., Chemical Communications*. (1996), 1511.
6. S. Zhang, G. Pohnert, P. Kongsaree, D.B. Wilson, J. Clardy and B. Ganem. Chorismate mutase-prephenate dehydratase from *Escherichia coli*: Study of Catalytic and regulatory domains using genetically engineered proteins, *Journal of Biological Chemistry*. (1998), 273,11, 6248-6253.
7. A.Y. Lee, S. Zhang, P. Kongsaree, J. Clardy, B. Ganem, J.W. Erickson and D. Xie. Thermodynamics of a transition state analogue inhibitor binding to *Escherichia coli* chorismate mutase: probing the charge state of an active site residue and its role in inhibitor binding and catalysis. *Biochemistry* (1998), 37(25), 9052-9057.
8. V. Reutrakul, R. Saeeng, M. Pohmakotr, and P. Kongsaree. Synthetic Applications of Samarium(II) Iodide Mediated Regioselective Cleavage of Phenylsulfonyl Activated Cyclopropyl Ketones. *Tetrahedron Letters* (1999), 40, 1019-1020.
9. P. Kongsaree, J. Liang, R.A. Jensen, and J. Clardy, Crystallization and preliminary X-ray crystallographic analysis of the *Pseudomonas aeruginosa* cyclohexadienyl dehydratase. *Acta Crystallographic Section D*. (1999), 55, 539-541.
10. P. Kittakoop, J. Punya, P. Kongsaree, Y. Lertwerawat, A. Jintasirikul, M. Tanticharoen and Y. Thebtaranonth. Bioactive naphthoquinones from *Cordyceps unilateralis*. *Phytochemistry*, (1999), 52, 453-457.
11. R.W. Bates and P. Kongsaree. Diastereoselectivity in Michael additions to a pyrrolidinyl enone. *Synlett*, (1999), 8, 1307-1309.

12. P. Kongsaree, S. Tanboriphan, B. Tarnchompoo and Y. Thebtaranonth. Irontricarbonyl complexes derived from 2,3-dicarbomethoxy-1,3, butadiene: Formation of $[(\text{Fe}(\text{CO})_3)_2(\sigma^2, \pi^2\text{-2,3-dicarbomethoxy-1,3-butadiene})]$. *Acta Crystallographic Section C*, (1999), 55, 2007-2010.
13. S. Ekthawatchai, M. Isaka, P. Kittakoop, P. Kongsaree, C. Sirichaiwat, M. Tanticharoen, B. Tarnchompoo, Y. Thebtaranonth and Y. Yuthavong, Synthetic and naturally occurring antimalarials. *Journal of Heterocyclic Chemistry*. (1999), 36, 6, 1599-1605.
14. C. Boonlaksiri, W. Oonant, P. Kongsaree, P. Kittakoop, M. Tanticharoen and Y. Thebtaranonth. An antimalarial stilbene from *Artocarpus integer*, *Phytochemistry*. (2000), 54, 4, 415-417.
15. M. Isaka, P. Kongsaree and Y. Thebtaranonth. Bioxanthracenes from the insect pathogenic fungus *Cordyceps pseudomilitaris* BCC 1620. II. Structure Elucidation. *Journal of Antibiotics*. (2001), 54, 36-43.
16. S. Sutthivaiyakit, J. Thongtan, S. Pisutjaroenpong, K. Jiaranantanont and P. Kongsaree. D:A Friedo-oleanane lactones from the stems of *Mallotus repandus*, *Journal of Natural Products*. (2001), 64(5), 569-571
17. M. Isaka, P. Kongsaree and Y. Thebtaranonth. Structures of cordypyridones A-D, antimalarial N-hydroxy- and N-methoxy-2-pyridones from the insect pathogenic fungus *Cordyceps nipponica*, *Journal of Organic Chemistry*. (2001), 66(14), 4803-4808.
18. P. Kongsaree, P. Meepowpan and Y. Thebtaranonth. Synthesis of Both Enantiomers of Methylenolactocin, Nephrosterinic Acid and Protolichesterinic Acid via Tandem Aldol – Lactonization Reactions. *Tetrahedron: Asymmetry*. (2001), 12 (13), 1913-1922.
19. S. Ekthawatchai, S. Kamchonwongpaisan, P. Kongsaree, B. Tarnchompoo, Y. Thebtaranonth, Y. Yuthavong. C-16 artemisinin derivatives and their antimalarial and cytotoxic activities: syntheses of artemisinin monomers, dimers, trimers, and tetramers by nucleophilic additions to artemisitene. *Journal of Medicinal Chemistry*. (2001), 44 (26), 4688-4695.
20. S. Youngme, N. Chaichit, P. Kongsaree, G. A. van Albada, J. Reedijk. Synthesis, structure, spectroscopy, and magnetism of two new dinuclear carbonato-bridged Cu (II) complexes. *Inorganica Chimica Acta*. (2001), 324 (1-2) 232-240.
21. R. W. Bates, P. Kongsaree, N. Nontapattamadul. Palladium Catalyzed Allylation Is Under Stereoelectronic Control. *ARKIVOC*, (2001), 269-275.
22. M. Isaka, C. Suyarnsestakorn M. Tanticharoen, P. Kongsaree, Y. Thebtaranonth. Aigialomycins A-E, New Resorcylic Macrolides from the Marine Mangrove Fungus *Aigialus parvus*, *Journal of Organic Chemistry*. (2002), 67 (5), 1561-1566.
23. S. Kanokmedhakul, K. Kanokmedhakul, N. Phonkerd, K. Soyong, P. Kongsaree, A. Suksamrarn. Antimycobacterial Anthraquinone-Chromanone Compound and Diketopiperazine Alkaloid from the Fungus *Chaetomium globosum* KMITL-N0802. *Planta Medica*, (2002), 68 (9), 834-836.
24. P. Pittayakhajonwut, M. Theerasilp, P. Kongsaree, A. Rungrod, M. Tanticharoen, Y. Thebtaranonth. Pughinin A, a Sesquiterpene from the Fungus *Kionochaeta pughii* BCC 3878. *Planta Medica*. (2002), 68 (11), 1017-1019.

25. S. Sutthivaiyakit, W. Mongkolvisut, P. Ponsitipiboon, S. Prabpai, P. Kongsaree, S. Ruchirawat, C. Mahidol. A novel 8,9-*seco*-rhamnolane and a new rhamnolane endoperoxide from *Jatropha integerrima* roots. *Tetrahedron Letters*. (2003), 44(18), 3637-3640.
26. P. Kongsaree, C. Samanchart, P. Laowanapiban, S. Wiyakrutta, V. Meevootisom. Crystallization and Preliminary X-ray Crystallographic Analysis of D-Phenylglycine Aminotransferase from *Pseudomonas stutzeri*. *Acta Crystallographica Section D*. (2003), 59(5), 953-954.
27. P. Kongsaree, S. Prabpai, N. Sriubolmas, C. Vongvein, S. Wiyakrutta. Antimalarial Dihydroisocoumarins Produced by *Geotrichum* sp., an Endophytic fungus of *Crassocephalum crepidioides*. *Journal of Natural Products*. (2003), 66(5), 709-711.
28. S. Kanokmedhakul, K. Kanokmedhakul, T. Prajuabsuk, K. Soyong, P. Kongsaree, A. Suksamrarn. Bioactive Triterpenoid and Vulpinic Acid Derivatives from the Mushroom *Scleroderma citrinum*. *Planta Medica*. (2003), 69, 568-571.
29. N. Kongkathip, B. Kongkathip, P. Siripong, C. Sangma, S. Luangkamin, M. Niyomdech, S. Pattanapa, S. Piyaviriyagul and P. Kongsaree. Potent Antitumor Activity of Synthetic 1,2-Naphthoquinones and 1,4-Naphthoquinones. *Bioorganic and Medicinal Chemistry*. (2003), 11(14), 3179-3191.
30. A. Itharat, A. Plubrukarn, P. Kongsaree, T. Bui, N. Keawpradub, and P. Houghton. Dioscorealides and dioscoreanone, novel cytotoxic naphthofuranoxepins and 1,4-phenanthraquinone from *Dioscorea membranacea* Pierre. *Organic Letters*. (2003), 5(16), 2879-2882.
31. C. Nilanonta, M. Isaka, P. Kittakoop, J. Saenboonrueng, V. Rukachaisirikul, P. Kongsaree, Y. Thebtaranonth. New diketopiperazines from the entomopathogenic fungus *Verticillium hemipterigenum* BCC 1449. *Journal of Antibiotics*. (2003), 56(7), 647-651.
32. S. Youngme, G. A. van Albada, N. Chaichit, P. Gunnasoot, P. Kongsaree, I. Mutikainen, O. Roubeau, J. Reedijk, U. Turpeinen. Synthesis, spectroscopic characterization, X-ray crystal structure and magnetic properties of oxalato-bridged copper(II) dinuclear complexes with di-2-pyridylamine. *Inorganica Chimica Acta*. (2003), 353, 119-128.
33. P. Vongvilai, M. Isaka, P. Kittakoop, P. Srikitikulchai, P. Kongsaree, Y. Thebtaranonth. Novel Ketene Acetal and Spiroacetal from the Marine Fungus, *Aigialus parvus* BCC 5311. *Journal of Natural Products* (2004). 67(3), 457-460.
34. M. Pohmakotr, D. Soorukram, P. Tuchinda, S. Prabpai, P. Kongsaree, V. Reutrakul. Highly diastereoselective alkylation of vicinal dianions of chiral succinic acid derivatives: a new general strategy to chiral β -arylmethyl- γ -butyrolactones. *Tetrahedron Letters* (2004), 45(22), 4315-4318.
35. S. Kanokmedhakul, K. Kanokmedhakul, K. Nambuddee, P. Kongsaree. New Bioactive Prenylflavonoids and Dibenzocycloheptene Derivative from Roots of *Dendrolobium lanceolatum*. *Journal of Natural Products*. Available online 1 May, 2004.
36. S. Luangkamin, N. Kongkathip, B. Kongkathip, C. Sangma, R. Grigg, P. Kongsaree, S. Prabpai, P. Yingyuad, S. Piyaviriyagul, P. Siripong. Total Synthesis of Novel Anticancer Naphthoquinone Esters and Rhinacanthin Derivatives. *Journal of Medicinal Chemistry*, Accepted for publication.

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Research and Professional Experiences:

1993, 1996 Teaching assistant in Biochemistry Laboratory (BC 416/516) for undergraduate students and graduate students, University of Michigan, Ann Arbor.

1994 Teaching assistant in Enzyme Kinetics (BC 573) for graduate students, University of Michigan, Ann Arbor.

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Publications :

1. *Chaiyen, P.*, Brissette, P., Ballou, D. P., & Massey, V., (1997) Thermodynamics and Reduction Kinetics Properties of 2-Methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase, *Biochemistry* **36**, 2612-2621.
2. *Chaiyen, P.*, Brissette, P., Ballou, D. P., & Massey, V., (1997) An Unusual Mechanism of Oxygen Atom Transfer and Product Rearrangement in the Catalytic Reaction of 2-Methyl-3-hydroxypyridine-5-carboxylic acid (MHPC) Oxygenase, *Biochemistry* **36**, 8060-8070.
3. *Chaiyen, P.*, Ballou, D. P., & Massey, V., (1997) Gene Cloning, Sequence Analysis, and Expression of 2-Methyl-3-hydroxypyridine-5-carboxylic acid (MHPC) Oxygenase *Proc. Natl. Acad. Sci. U.S.A.* **94**, 7233-7238.
4. *Chaiyen, P.*, Brissette, P., Ballou, D. P., & Massey, V., (1997) Reaction of 2-methyl-3-hydroxypyridine-5-carboxylic acid (MHPC) oxygenase with N-methyl-5-hydroxynicotinic acid: studies on the mode of binding, and protonation status of the substrate, *Biochemistry* **36**, 13856-13864.
5. *Chaiyen, P.*, Ballou, D.P., & Massey, V. (1997) 2-Methyl-3-hydroxypyridine-5-carboxylic acid (MHPC) Oxygenase: The Hydroxylase Capable of Catalyzing a Ring Cleavage Reaction. In *Flavins and Flavoproteins* (Stevenson, K.J., Massey, V., & Williams, C.H., eds.), U. of Calgary Press, Calgary pp 379-382.
6. *Chaiyen, P.*, Suadee, C., & Wilairat, P. (2001) A Novel Two-Protein Component Flavoprotein Hydroxylase: *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*, in *Eur J. Biochem* **268** (21), 5550-5561.
7. *Chaiyen, P.*, Suadee, C., Thotsaporn, K. & Svasti, M.R. J. (2002) Studies of the Two-Component *p*-Hydroxyphenylacetate Hydroxylase from *Acinetobacter baumannii*, in *Flavins & Flavoproteins*, (Eds : Chapman, S., Perham, R., and Scrutton, N.), Rudolf Weber, Berlin, pp. 975-980.
8. Sucharitakul, J., *Chaiyen, P.*, Ballou, D. P., & Massey, V. (2002) Probing the Mechanism of 2-Methyl-3-Hydroxypyridine-5-Carboxylic Acid Oxygenase by Using 8-Substituted-FAD Analogs, in *Flavins & Flavoproteins*, (Eds : Chapman, S., Perham, R., and Scrutton, N.), Rudolf Weber, Berlin, pp. 381-386.
9. *Chaiyen, P.*, Sucharitakul, J., Svasti, J., Entsch, B., Massey V. and Ballou, D.P. (2004) Use of 8-Substituted-FAD Analogs to Investigate the Hydroxylation Mechanism of the Flavoprotein 2-Methyl-3-hydroxypyridine-5-carboxylic Acid Oxygenase, *Biochemistry* **43**, 3933-3943.

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Other experience:

2000	Assistant President, Quality Assurance Office, Mahasarakham University
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1987	Research Assistant, Reproductive Biology Unit, Chulalongkorn Hospital
1981-1986	Research Assistant, Biochemistry Department, Faculty of Science, Mahidol University

Fellowship and Award:

1992-1997	Ph.D. Scholarship from the Ministry of Science, Technology and Environment
1978	Recipient of Dr.Tap Nilaniti Outstanding Graduate Award

Publications:

1. Anguravirutt, S., and Svasti, J., "A New Procedure in the Purification of Rat Testis-Specific Histone TH2B Involving Affinity-Related Chromatography. (1981) *Archives Biochemistry and Biophysics*, **210**, pp.412-416.
2. Yongvanich, T., Wattanaseree, J., Anguravirutt, S., and Svasti, J., "Improved Purification and Peptide Mapping of Human and Rat Testis-specific Histone TH2B" *3rd. FAOB Congress*, Bangkok, Thailand, 1983.
3. Svasti, J., Anguravirutt, S. and Toowicharanont, P. (1984) The Application of Affinity Chromatography in the Isolation of Proteins and Enzymes Specific for Male Germ Cells. *Proceedings, Third Symposium of the Federation of Asian and Oceanian Biochemists, Bali, Indonesia* (Moeljohardo, D.S., ed.), pp.32-38.

4. Manavanich, C., *Anguravirutt, S.* and Svasti, J. (1986) Effect of Gossypol on Lactate Dehydrogenase Isozymes of the Rat. In *Contemporary Themes in Biochemistry* (Kon, O.L. *et al.*, ed.), ICSU Short Reports Vol. 6, Cambridge University Press, pp. 304-305.
5. *Anguravirutt, S.*, Tangtieng, Y., Chandkrachang, S., Chinadit, U., and Supasiri, T., "Comparison Studies of the Reactivity of Diethylaminoethyl Cellulose and Quaternary Ammonium Polystyrene on Galactans." *5th FAOB Congress*, Seoul, Republic of South Korea, 1989.

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1997 Ph. D. Biochemistry, Mahidol University, Thailand

Awards and Distinctions :

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Research and Professional Experiences:

1997-1999 Researcher, National Center for Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA), Bangkok, Thailand

1999-present Lecturer, Department of Biochemistry, Faculty of Liberal Arts and Science, Kasetsart University, Kamphangsaeen Campus, Nakhorn Pathom, Thailand

Publications :

1. *Wongvithoonyaporn, P., Bucke, C., & Svasti, J., (1998) Separation, Characterization, and Specificity of α -Mannosidases from Vigna umbellata, Biosci. Biotech. Biochem. 62(4), 613-621.*

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- 1990-1993 M.Sc. (Biochemistry); Dept. of Biochemistry, Mahidol University, Thailand
- 1986-1990 B.Sc. (Genetics); Dept. of Botany and Genetics, Chulalongkorn University, Thailand

Research and teaching experience

- 1994-Present Lecturer in Biochemistry, School of Chemistry, Institute of Science, Suranaree University, Thailand
- 1999-2000 Postdoctoral Research Associate
Research Title: Cloning and Expression of Membrane Proteins in the Intracellular Chloride Ion Channel (CLIC) Family for Structural and Functional Studies
- 1995-1999 Ph.D. Biochemistry, Thesis Title: Molecular Biological Studies of Chi A from a Marine Bacterium, *Vibrio carchariae*
- 1990-1993 M.Sc. Biochemistry: Thesis Title: Purification and Characterisation of β -galactosidase from Thai Jute, *Hibiscus sabdariffa* L. var. *altissima*

Field of expertise

1. Protein biochemistry, especially, in polysaccharide-degrading enzymes
2. Molecular biology and biochemistry of bacterial membrane proteins

Fellowships and Awards

- 2004 The General Travel award from the British Biochemical Society to visit Germany, April1-May15, 2004
- 2003 DAAD scholarship for Study Visit to Germany, April 1-May15, 2003

1999-2000	Postdoctoral Fellowship under the Wellcome Trust Fund
1995-1998	The Royal Thai Government Scholarship for Ph.D. degree
1994	The Outstanding Poster Presentation Award on the 11 th FAOBMB Symposium, 15-18 November, 1994, Bangkok, Thailand
1990-1993	The Suranaree University of Technology Scholarship for M.Sc. degree
1989	The Most Improved in Study Award for undergraduate study

Publications

1. **Suginta, W.**, and Svasti, J. (1995) Beta-Galactosidase from Thai Jute: Purification and Characterization. In *Biopolymers and Bioproducts: Structure, Function and Applications* (Svasti, J. et al., eds.), Samakkhisan Public Co. Ltd., Bangkok, pp. 256-260.
2. **Suginta, W.**, and Svasti, M.R.J. (1995) Purification and Properties of β -Galactosidase from *Hibiscus sabdariffa* L. var. *altissima*. *J. Sci. Soc. Thailand.* 21, 183-186.
3. Surarit, R., Svasti, M.R. J., Srisomsap, C., **Suginta, W.**, Khunyoshyeng, S., Nilwarangkoon, S., Harnsakul, P. and Benjavongkulchai, E. (1995) Possible Use of Glycosidase Enzymes from Thai Plant Seeds for Oligosaccharide Synthesis. In *Biopolymers and Bioproducts: structure, function and applications* (Svasti, J. et al., eds.), Samakkhisan Public Co. Ltd., Bangkok., pp. 251-255.
4. Svasti, J., Srisomsap, C., Surarit, R., Benjavongkulchai, E., **Suginta, W.**, Khunyoshyeng, S., Champattanachai, V., Nilwarangkoon, S., Rungvirayudx, S. (1996) Potential Applications of Plant Glycohydrolases for Oligosaccharide Synthesis. In *Protein Structure-Function Relationship* (Zaidi, Z.H. and Smith, D.L., eds.), Plenum Press pp 249-257.
5. **Suginta, W.**, Robertson, P.A.W., Austin, B., Fry, S.C., Fothergill-Gilmore, L.A. (2000) Chitinases from *Vibrio*: activity screening and purification of chi A from *Vibrio carchariae*, *J. Appl. Microbiol.* 89, 76-84
6. **Suginta, W.**, Karoulis, N., Aitken, A., and Ashley, R.H. (2001) Brain dynamin-1 interacts directly with the chloride intracellular channel protein CLIC4 in a complex containing actin and 14-3-3 proteins, *Biochem. J.* 359:55-64.
7. Siritapetawee, J., Prinz H., Samosornsook, W., Ashley R.H., and **Suginta W.** (2004) Functional reconstitution, gene isolation and topology modelling of porins from *Burkholderia pseudomallei* and *B. thailandensis*, *Biochem. J.* 377:579-587
8. **Suginta, W.**, Vongsuwan, A., Songsiriritthigul, C., Prinz, H., Estibeiro, P., Duncan, R.R., Svasti, J., and Fothergill-Gilmore, L.A. (2004) An endochitinase A from *Vibrio carchariae*: cloning, expression, mass and sequence analyses, and chitin hydrolysis. *Arch. Biochem. Biophys* **424**, 171-180.

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Awards

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2001 Outstanding Thesis Award, Chemistry and Pharmacy Section from National Research Council of Thailand

Invited Oral Presentations

2002 “Site-specific Photocleavage of Proteins”, Department of Chemistry, University of Connecticut, USA.

Research and Professional Experiences:

1994-1998 Teaching assistant in General Chemistry Laboratory and Physical Chemistry Laboratory for undergraduate students, University of Connecticut, USA
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2. *Buranaprapuk, A.*, Leach, S. P., Kumar, C. V. and Bocarsly, J. (1998) Protein Cleavage by Transition Metal Complexes Bearing Amino Acid Substituents *Biochimica et Biophysica Acta* **1387**, 309-316
3. Kumar, C. V., *Buranaprapuk, A.*, Opiteck, G. J., Moyer, M. B., Jockusch, S. and Turro, N. J. (1998) Photochemical protease: Site-specific photocleavage of hen egg lysozyme and bovine serum albumin *Proc. Natl. Acad. Sci. USA* **95**, 10361-10366
4. *Buranaprapuk, A.*, Kumar, C. V. New protein scissors turned on by light, in News of the week, *Chemical & Engineering News* September 7, 1998, p.12
5. "Site-Specific Photocleavage of Proteins" *Angew. Chem. Int. Ed. Engl.* (1997) **36**, 2085" was selected to be one of the four recent noteworthy articles in the area of photochemistry and photophysics *Inter-American Photochemical Society Newsletter* **21**(1), May 1998.
6. Kumar, C. V. and *Buranaprapuk, A.* (1999) Tuning the Selectivity of Protein Photocleavage: Spectroscopic and Photochemical Studies *J. Am. Chem. Soc.* **121**, 4262-4270
7. Kumar, C. V., *Buranaprapuk, A.*, Cho, A. and Chaudhari, A. (2000) Artificial Metallopeptidases: Regioselective Cleavage of Lysozyme, *Chem. Comm.* 597-599
8. *Buranaprapuk, A.*, Kumar, C. V., Jockusch, S., and Turro, N. J. (2000) Photochemical Protein Scissors: Role of Aromatic Residues on the Binding Affinity and Photocleavage Efficiency of Pyrenyl Peptides *Tetrahedron* 7019-7025
9. Kumar, C. V., *Buranaprapuk, A.*, and Sze, H. C. (2001) Large Chiral Discrimination of a Molecular Probe by Bovine Serum Albumin *Chem. Comm.* **3**, 297-299
10. Kumar, C. V., *Buranaprapuk, A.*, and Sze, H. C., Jockusch, S., and Turro, N. J. (2002) Chiral Protein Scissors: High Enantiomeric Selectivity for Binding and its Effect on Protein Photocleavage Efficiency and Specificity *Proc. Natl. Acad. Sci. USA* **99**(9), 5810-5815

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Fellowships and Awards

1994 Dr.Tab Nilanithi Outstanding Graduate Award

1994-1999 Scholarship under the Staff Development Program of Ministry of University Affairs

Publications

1. Yuvaniyama P, Agar JN, Cash VL, Johnson MK, Dean DR. NifS-directed assembly of a transient [2Fe-2S] cluster within the NifU protein. *Proc Natl Acad Sci U S A*. 2000 Jan 18;97(2):599-604.
2. Agar JN, Yuvaniyama P, Jack RF, Cash VL, Smith AD, Dean DR, Johnson MK. Modular organization and identification of a mononuclear iron-binding site within the NifU protein. *J Biol Inorg Chem*. 2000 Apr; 5(2):167-177.

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Scholarships and Awards

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1996 Sydney University Biochemistry Alumni Award
2000 IUBMB Young Scientist Travel Fellowship to attend 18th International Congress of Biochemistry and Molecular Biology, 13–20 July 2000, Birmingham, U.K.
2002 FAOBMB Travel Fellowship, to attend the 16th FAOBMB Symposium, 20–22 September 2002, Taipei, Taiwan.

Publications

1. Toonkool, P. and Weiss, A.S. (2001) Expression of recombinant human tropoelastin in *Saccharomyces cerevisiae* containing a synthetic gene with a high codon adaptation index coupled to the *SUC2* invertase signal sequence. *Acta Biotechnol.* **21**, 189–193.
2. Toonkool, P., Regan, D.G., Morris, M.B., Kuchel, P.W. and Weiss, A.S. (2001) Thermodynamic and hydrodynamic properties of human tropoelastin: analytical ultracentrifuge and pulsed field-gradient spin-echo NMR studies. *J. Biol. Chem.* **276**, 28042–28050.
3. Toonkool, P., Jensen, S.A., Maxwell, A.L. and Weiss, A.S. (2001) Hydrophobic domains of human tropoelastin interact in a context-dependent manner. *J. Biol. Chem.* **276**, 44575–44580.