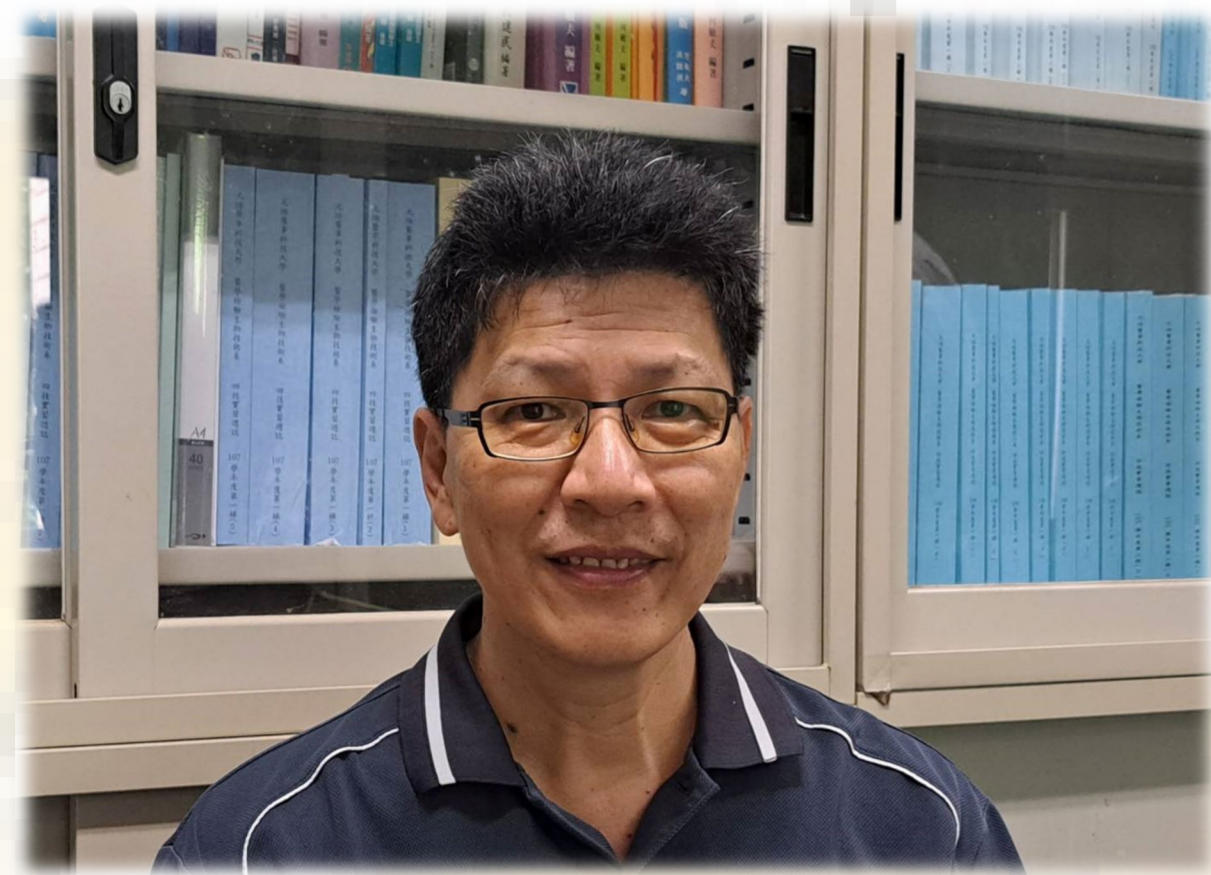




詳細著作與計畫
請掃QR code



實驗室主持人學經歷

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Academic expertise: Molecular Biology, Protein Chemistry, Biotechnology
Teach subjects: Chemistry, Organic Chemistry, Biochemistry, Clinical Proteomics

實驗室簡介

蛋白質體實驗室提供學生分子檢驗技術及蛋白質純化分析應用。目前主軸在抗癌及預防心血管疾病蛋白質分子之純化與應用探討，讓學生得以學習相關的知識以及實作能力，幫助學生未來的就業與深造的實力。教導學生學習如何純化蛋白質，熟悉操作蛋白質純化技術及基因選殖及表現，研究主題有：豆科植物胰蛋白酶抑制劑之抗癌、抗氧化能力之研究。桑黃多醣體抗氧化及抗動脈硬化保健之研究。

核心技術

凝膠過濾法、離子交換層析法、親和性層析法、FPLC、基因選殖及表現

Laboratory profile

The Proteosome Laboratory provides students with molecular testing techniques and protein purification and analysis applications. The current focus is on the purification and application of protein molecules for anti-cancer and prevention of cardiovascular diseases, so that students can learn relevant knowledge and practical ability, and help students' future employment and further study. Teach students how to purify protein, familiarize themselves with protein purification technology and gene cloning and expression. Research topics include: research on the anti-cancer and anti-oxidation ability of trypsin inhibitors in leguminous plants. Phellinus polysaccharide anti-oxidation and anti-arteriosclerosis health research.

Core Technologies

gel filtration、ion exchange chromatography、affinity chromatography、FPLC、gene cloning and expression

Important publications

Wu, Chia-Chen、Wang, Hai-Lung、Hung, Chih-Hung*, 「Acacia confusa trypsin inhibitor induced apoptosis of HT-29 human colon cancer cells via inhibition of ERK 1/2 phosphorylation and caspase-3 activation」, *Journal of Health Management*, Vol. 19, No. 1, 2021, pp. 15-30。
27. Liao, Mei-I、Wang, Hai-Lung、Hung, Chih-Hung*, 「Cloning of a gene encoding Bowman-Birk type protease inhibitor from *Phaseolus coccineus*」, *Journal of Health Management*, Vol. 20, No. 2, 2022, pp. 1-14.



Phaseolus coccineus M-----LV LKCVLLVFL AG-VITARMQ LNLH-I-GSN H-HDSDE-P SESSEPEQDI Q@TASIPPI 58
Phaseolus fliformis MGLKNNMTH LKCVLLVFL LG-TSTASLK LSELQLMKS QHHHESTDEP SSSKACDQ @HTSIFPPQ 69
Phaseolus microcarpus M-----MV LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPI 59
Phaseolus parvulus MGLKNNMTH LKCVLLVFL LG-TSTASLK LSELQLMKS QHHHESTDEP SSSKACDQ @HTSIFPPQ 69
Phaseolus grayanus MGLKNNMTH LKCVLLVFL LG-TSTASLK LSELQLMKS QHHHESTDEP SSSKACDQ @HTSIFPPQ 69
Vigna radiata M-----MV LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPPQ 58
Vigna umbellata M-----MV LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPPQ 58
Vigna vexillata M-----MV LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPPQ 58
Vigna mungo MGLKNNMTH LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPPQ 58
glycine max MGLKNNMTH LKCVLLVFL VGVYTAQH Q LNLK--RLS H-HDSDE-P SESSEPEQDI @HTSIFPPQ 58

Phaseolus coccineus @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 107 Trypsin reactive site loop
Phaseolus fliformis @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 120
Phaseolus microcarpus @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 107
Phaseolus parvulus @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 120
Phaseolus grayanus @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 120
Vigna radiata @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 108
Vigna umbellata @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 108
Vigna vexillata @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 108
Vigna mungo @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 109
glycine max @QDTRVRLNS @S@AK@SG@E @TRSPG@E@E @LTTD@E@YS @K@PK@G@E@D@ 109

Chymotrypsin reactive site loop

圖4 由PCTI基因序列所推導的胺基酸序列與多種Bowman-Birk型蛋白酶抑制劑家族序列比對。胰蛋白酶和胰凝乳蛋白酶反應位點胺基酸分別用“*”和“#”標記。PCTI的十四個半胱胺酸殘基骨架顯示與已發表的Bowman-Birk型蛋白酶抑制劑比對，用灰色表示。

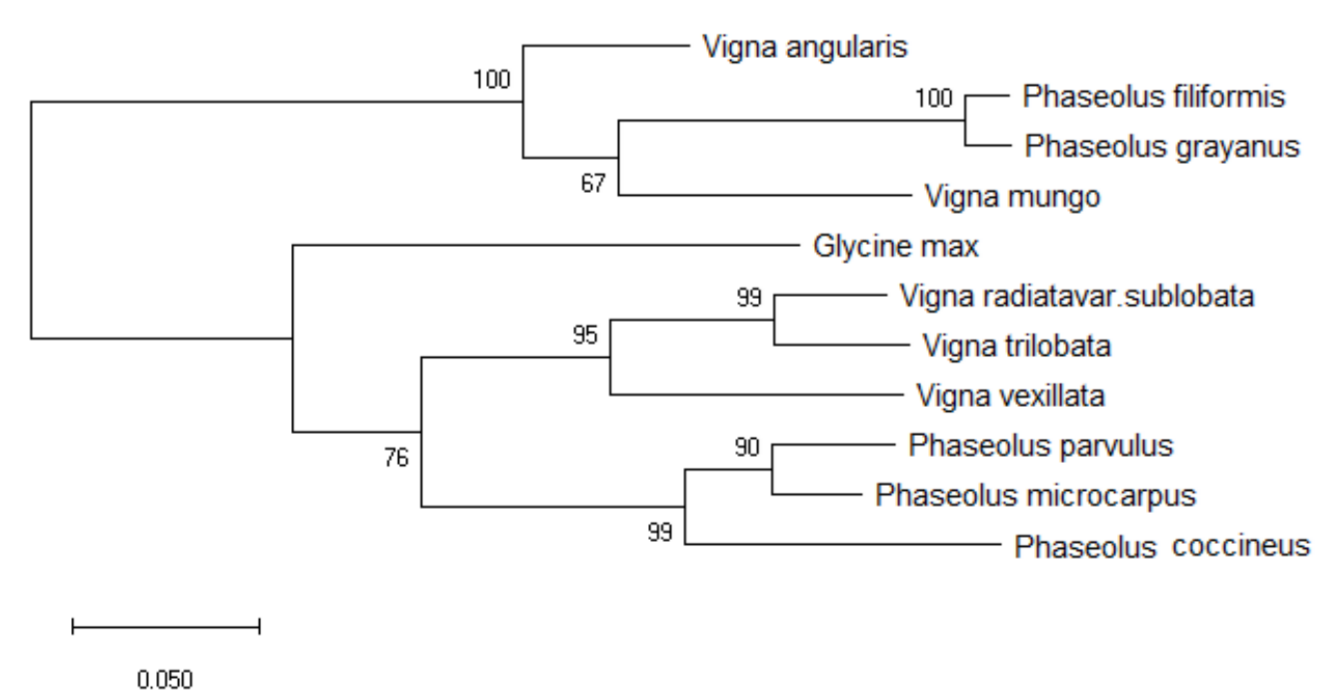


圖6 花豆的PCTI和其他種類植物的Bowman-Birk型蛋白酶抑制劑蛋白做親緣關係樹分析(pylogenetic analysis)。利用MEGA 6.0軟體分析，分支處的數值描述了物種類群的bootstrapping value，顯示類群的穩健性(robustness)。