# Biochem. Eng. & Pilot Plant Research and Dev. Unit (Thai)

Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÇÔ¨ÑÂ

áÅÐ¾Ñ²¹ÒÇÔÈÇ¡ÃÃÁªÕÇà¤ÁÕáÅÐâÃ§§Ò¹µé¹áºº

Biochemical Engineering

and Pilot Plant Research and Development Unit

(BEC)

»ÃÐÇÑµÔ¤ÇÒÁà»ç¹ÁÒ

Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÇÔ¨ÑÂáÅÐ¾Ñ²¹ÒÇÔÈÇ¡ÃÃÁªÕÇà¤ÁÕáÅÐâÃ§§Ò¹µé¹áºº (BEC) à»ç¹Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÇÔ¨ÑÂ·Õè¨Ñ´µ

áÅÐà·¤â¹âÅÂÕªÕÇÀÒ¾áËè§ªÒµÔ (Èª.) áÅÐÁËÒÇÔ·ÂÒÅÑÂà·¤â¹âÅÂÕ¾ÃÐ¨ÍÁà¡ÅéÒ¸ºØÃÕ (Á¨¸.) ÁÕÇÑµ¶Ø»ÃÐÊ§¤ìà¾×
â´ÂÃ¹»Õ ¾ . È . 2529 ¡ÅØèÁÇÔ¨ÑÂ·ÕèÃèÇÁÁ×Í¡Ñ¹·Ó§Ò¹ÇÔ¨ÑÂáÅÐ¾Ñ²¹Ò¢Õ´¤ÇÒÁÊÒÁÒÃ¶áÅÐà·¤â¹âÅÂÕ·Ò§ ´éÒ¹ÇÔÈÇ¡
áÅÐä´éÃÑº¤ÇÒÁàËç¹ªÍºãËéà»ç¹Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃà¤Ã×Í¢èÒÂ â´ÂÁÕà¡³±ÌéÒ§ÍÔ§ ¡ÒÃ·Ó§Ò¹·Õè¡ÓË¹´äÇéÍÂèÒ§ªÑ´à¨¹ áÅÐ·
ã¹ÃÐÂÐ·ÕèË¹Öè§µÑé§áµè»Õ ¾.È. 2529-2537

ã¹ÃÐÂÐ·Õè 2 ÃÐËÇèÒ§»Õ ¾ . È . 2538 – 2542 Èª . ä´é»ÃÑºà»ÅÕèÂ¹¨Ò¡Ë¹èÇÂ§Ò¹ÃÒª¡ÒÃà»ç¹Í§¤ì¡ÃÃ¹¡Ó¡Ñº¢Í§ÃÑ° à
·Ó§Ò¹ÃèÇÁ¡ÑºË¹èÇÂ»¯ÔºÑµÔ¡ÒÃµèÒ§ æ Èª . ä´éàÃÕèÁà»ÅÕèÂ¹ÃÙ»áºº¤ÇÒÁÃèÇÁÁ×Í¢Í§Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃà¤Ã×Í¢èÒÂ ª
â´ÂÁÍºãËéºØ¤ÅÒ¡Ã¢Í§ÁËÒÇÔ·ÂÒÅÑÂ à»ç¹ËÑÇË¹éÒË¹èÇÂ»¯ÔºÑµÔ¡ÒÃ ·ÓË¹éÒ·ÕèºÃÔËÒÃ¨Ñ´¡ÒÃË¹èÇÂãËé¡Ñº Èª . áÅÐä
à¹é¹¡ÒÃ·Ó§Ò¹µÒÁá¼¹»¯ÔºÑµÔ¡ÒÃâ´ÂÊè§àÊÃÔÁáÅÐ»ÃÐÊÒ¹¤ÇÒÁÃèÇÁÁ×Í¢Í§¹¡ÇÔ¨ÑÂ¢Í§·Ñé§ 2 Ë¹èÇÂ§Ò¹ «Öè§¨Ð·Ó§Ò
·ÕèÃèÇÁÁ×Í¡Ñ¹ÍÂÙè·Ñé§ÀÒÂãµé¡ÒÃ´Óà¹Ô¹§Ò¹¢Í§ Á¨¸ . ã¹ÅÑ¡É³ÐãËéà¡Ô´¡ÒÃãªé·ÃÑ¾ÂÒ¡ÃµèÒ§æ ÃèÇÁ¡Ñ¹áÅÐä´é¼ÅÅÑ¾
äÁèä´éÁÕ¡ÒÃ¾Ñ²¹ÒãËéà»ç¹ÃÐºº·ÕèÁÕ¤ÇÒÁªÑ´à¨¹ ÊÓËÃÑº¤ÇÒÁÃèÇÁÁ×ÍÃÐËÇèÒ§ Á¨¸ . áÅÐ Èª .

¡ÒÃ´Óà¹Ô¹§Ò¹ã¹ÃÐÂÐ·Õè 3 ÃÐËÇèÒ§»Õ ¾ . È . 2543 – 2547 ÃÙ»áºº¤ÇÒÁÃèÇÁÁ×Íä´éà»ÅÕèÂ¹à»ç¹ Èª . â´Â¤ÇÒÁÃ
à¾×èÍà»ç¹ÈÙ¹Âì¾Ñ²¹ÒáÅÐ¶èÒÂ·Í´à·¤â¹âÅÂÕ·Ò§´éÒ¹ÇÔÈÇ¡ÃÃÁªÕÇà¤ÁÕáÅÐâÃ§§Ò¹µé¹áºº áÅÐ¨Ñ´·Ó¤ÇÒÁÃèÇÁÁ×Íà»ç¹¢é
¡Ô¨¡ÃÃÁ¤ÇÒÁÃèÇÁÁ×Í·Ò§ÇÔªÒ¡ÒÃáÅÐ§Ò¹ÇÔ¨ÑÂ áÅÐ¤ÇÒÁà¢éÒÃ¨¶Ö§¡ÒÃÊ¹ÑºÊ¹Ø¹áÅÐº·ºÒ·¢Í§áµèÅÐ½èÒÂ â´Âä´éÁÕ¾
àÁ×èÍÇÑ¹·Õè 23 ¸Ñ¹ÇÒ¤Á 2542 áÅÐÁÕ¡ÒÃ¨Ñ´·Óá¼¹¡ÒÃ´Óà¹Ô¹§Ò¹ 5 »Õ ©ºÑº·Õè 2 (2543-2547) äÇéà»ç¹¡ÃÍº¢Í§¡ÒÃ·Ó§Ò¹ ã¹
»ÃÐàÁÔ¹¡ÒÃ´Óà¹Ô¹§Ò¹¢Í§Ë¹èÇÂ BEC â´ÂÊ¶ÒºÑ¹¤Õ¹Ñ¹áËè§àÍàªÕÂ µÒÁá¼¹¡ÒÃ´Óà¹Ô¹§Ò¹ã¹ªèÇ§»Õ 2543-2546 ¼Å¡ÒÃ»ÃÐà
ÁÕ¼Å§Ò¹·Õè¡éÒÇÈ¹éÒã¹ÃÐ´Ñº´Õ¶Ö§´ÕÁÒ¡ ÁÕ¡ÒÃÊÑè§ÊÁ¤ÇÒÁÃÙé ¼Å§Ò¹ÇÔ¨ÑÂ·ÕèÁÕÈÑ¡ÂÀÒ¾·Õè¨Ð¾Ñ²¹Òä»ÊÙè¤Ç
¡ÒÃ´Óà¹Ô¹§Ò¹ã¹ÃÐÂÐ¹ÕéÊÔé¹ÊØ´Å§ Èª. áÅÐ Á¨¸. ä´éµ¡Å§¢ÂÒÂÃÐÂÐàÇÅÒ¢Í§ºÑ¹·Ö¡¢éÍµ¡Å§¤ÇÒÁÃèÇÁÁ×ÍÍÍ¡ä»ÍÕ¡ 1 »Õ ¹Ñ
2542 ÊÔé¹ÊØ´Å§ áÅÐä´éÁÕ¡ÒÃËÒÃ×ÍÃÐËÇèÒ§¼ÙéºÃÔËÒÃË¹èÇÂ»¯ÔºÑµÔ¡ÒÃÏ ¡Ñº¼ÙéºÃÔËÒÃ¢Í§ Èª. áÅÐ Á¨¸. à¾×èÍ»Ã
ÃèÇÁÁ×Íã¹¡ÒÃ´Óà¹Ô¹§Ò¹Ë¹èÇÂ BEC ã¹ÃÐÂÐ·Õè¼èÒ¹ÁÒ ¡ÅØèÁÇÔ¨ÑÂµèÒ§æ ã¹Ë¹èÇÂä´éÊÃéÒ§¤ÇÒÁÊÒÁÒÃ¶·Ò§à·¤â¹â
¤ÇÒÁ¾ÃéÍÁã¹¡ÒÃ¾Ñ²¹Òä»ÊÙèÈÙ¹Âì¤ÇÒÁà»ç¹àÅÔÈà©¾ÒÐ·Ò§ / ÈÙ¹ÂìàªÕèÂÇªÒ-à©¾ÒÐ·Ò§ àªè¹ ¡ÅØèÁÇÔ¨ÑÂ Waste Ut
à·¤â¹âÅÂÕ¡ÒÃºÓºÑ´¹éÓàÊÕÂáÅÐ¡ÒÃ¼ÅÔµ¡êÒ«ªÕÇÀÒ¾·ÕèÁÕ»ÃÐÊÔ·¸ÔÀÒ¾ÊÙ§ ÁÕ¡ÒÃ¶èÒÂ·Í´à·¤â¹âÅÂÕ¹Óä»ÊÙè¡ÒÃ
«Öè§ÁÕÈÑ¡ÂÀÒ¾ÊÒÁÒÃ¶¾Ñ²¹Òà»ç¹¡ÒÃ´Óà¹Ô¹§Ò¹à»ç¹ÈÙ¹ÂìàªÕèÂÇªÒ-ÃÐ´ÑºªÒµÔä´é ·Ñé§ÊÍ§½èÒÂ¨Ö§àÊç¹ ªÍºãËé´Óà¹Ô
Management (WUM) ÍÍ¡ä»´Óà¹Ô¹§Ò¹ã¹ÅÑ¡É³ÐÈÙ¹ÂìàªÕèÂÇªÒ- à©¾ÒÐ·Ò§ à¾×èÍ¾Ñ²¹Òà»ç¹ÈÙ¹ÂìàªÕèÂÇªÒ-à©¾ÒÐ·Ò§ ÃÐ

Ë¹èÇÂ BEC àÃÔèÁ´Óà¹Ô¹¡ÒÃá¼¹ 5 »Õ ©ºÑº·Õè 3 (¾.È. 2549- ¾.È. 2553) ã¹»Õ§º»ÃÐÁÒ³ 2549 ä´éÁÕ¡ÒÃ¨Ñ´ÓºÑ¹·Ö¡¢éÍµ¡Á
¢ÂÒÂÃÐÂÐàÇÅÒ¤ÇÒÁÃèÇÁÁ×ÍµèÍä»à»ç¹ÃÐÂÐàÇÅÒ 5 »Õ µÑé§áµè 1 µØÅÒ¤Á 2548 ¶Ö§ 30 ¡Ñ¹ÂÒÂ¹ 2553 â´ÂÁÕÇÑµ¶Ø»
ÇÔÈÇ¡ÃÃÁªÕÇà¤ÁÕáÅÐâÃ§§Ò¹µé¹áºº¢Í§»ÃÐà·È áÅÐ¾Ñ²¹Òà·¤â¹âÅÂÕ¾×é¹°Ò¹áÅÐà·¤â¹âÅÂÕ·Õè¨ÐàÊÃÔÁ§Ò¹ÇÔ¨ÑÂ ¾Ñ²
áÅÐ ¡ÒÃ¾Ñ²ÒºØ¤ÅÒ¡Ã ã¹ÊÒ¢Ò·Õèà¡ÕèÂÇ¢éÍ§ â´ÂÁÕ¡ÃÍº¡ÒÃ·Ó§Ò¹»ÃÐ¡Í°´éÇÂ§Ò¹ã¹¡ÅØèÁÇÔ¨ÑÂËÅÑ¡ ¡ÅØèÁ ä´éá¡è ¡Å
à·¤â¹âÅÂÕà«¹à«ÍÃì (Sensor Technology), ¡ÒÃ¾Ñ²Ò¡ÃÐºÇ¹¡ÒÃ·Ò§ªÕÇÀÒ¾¢Í§ ¨ØÅÔ¹·ÃÕÂì ( Microbial Bioprocess Developme
Technology and Engineering), áÅÐ ªÕÇÇÔ·ÂÒÃÐººáÅÐªÕÇÊÒ ÃÊ¹à·È ( Systems Biology and Bioinformatics)
ÃÇÁ¶Ö§§Ò¹·Ò§´éÒ¹âÃ§§Ò¹µé¹áºº¡ÒÃËÁÑ¡áÅÐ§Ò¹ºÃÔ¡ÒÃÇÔªÒ¡ÒÃã¹´éÒ¹µèÒ§æ

¡ÒÃ´Óà¹Ô¹§Ò¹¢Í§Ë¹èÇÂ BEC »Ñ¨¨ØºÑ¹ ÍÂÙèÀÒÂãµé¡ÒÃºÃÔËÒÃ¨Ñ´¡ÒÃ¢Í§ ÃÈ.´Ã.âÊÌÊ ÊØÇÃÃ³Â×¹ «Öè§à»ç¹¼ÙéÍÓ¹ÇÂ¡Ò

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ÇÔÊÑÂ·ÑÈ¹ì

BEC ¨Ðà»ç¹ÈÙ¹ÂìÇÔ¨ÑÂ¾Ñ²ÒáÅÐ¶èÒÂ·Í´à·¤â¹âÅÂÕ ·Ò§´éÒ¹ÇÔÈÇ¡ÃÃÁªÕÇà¤ÁÕáÅÐà·¤â¹âÅÂÕªÕÇÀÒ¾·Õèà¡ÕèÂÇ¢éÍ

ªÑé¹¹Ó¢Í§ÀÙÁÔÀÒ¤ ·Ñé§ã¹´éÒ¹¡ÒÃÇÔ¨ÑÂáÅÐ¾Ñ²ÒÇÔÈÇ¡ÃÃÁ áÅÐ¡ÒÃºÃÔ¡ÒÃÇÔªÒ¡ÒÃ «Öè§ÊÒÁÒÃ¶µÍºÊ¹Í§µèÍ¤ÇÒÁ

¾Ñ¹¸¡Ô¨

·Ó¡ÒÃÇÔ¨ÑÂáÅÐ¾Ñ²Òà¾×èÍ¾Ñ²Ò¤ÇÒÁÃÙé¤ÇÒÁÊÒÁÒÃ¶ ã¹¡ÒÃ¾Ñ²ÒáÅÐ»ÃÑº»ÃØ§¼ÅÔµÀÑ³±ì ¡ÃÐºÇ¹¡ÒÃáÅÐà·¤â¹
ãËé¹Óä»ÊÙè¡ÒÃ¶èÒÂ·Í´áÅÐ¡ÒÃãªé§Ò¹¨ÃÔ§ËÃ×Íã¹àªÔ§¡ÒÃ¤éÒ ·Ñé§ã¹»ÃÐà·ÈáÅÐÀÙÁÔÀÒ¤ â´ÂÍÒÈÑÂ¡ÒÃãªéÃÐºº / ÍØ»¡Ã
à»ç¹à¤Ã×èÍ§Á×ÍÊÓ¤Ñ-ã¹¡ÒÃ´Óà¹Ô¹§Ò¹

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¡ÒÃºÃÔËÒÃ¨Ñ´¡ÒÃ¡ÅØèÁÇÔ¨ÑÂ

Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÏ ÃèÇÁ´Óà¹Ô¹§Ò¹¡ÑºÊÓ¹Ñ¡ÊÇ¹ÍØµÊÒËë¡ÃÃÁ (IPC) Ê¶ÒºÑ¹¾Ñ²ÒáÅÐ½Ö¡ÍºÃÁâÃ§§Ò¹µé¹áºº (PDTI) áÅÐ
ºÃÔËÒÃ§Ò¹ÇÔ¨ÑÂã¹ÃÙ»áºº¢Í§¡ÅØèÁÇÔ¨ÑÂ (R&D Cluster) â´ÂÁÕºØ¤ÅÒ¡Ã¨Ò¡Ë¹èÇÂ§Ò¹´Ñ§¡ÅèÒÇÁÒÃèÇÁÁ×Íà¾×èÍ´Óà¹Ô¹
¾Ñ²ÒÃÐººÇÔ¨ÑÂ·Õèà¢éÁá¢ç§¨Óà»ç¹µéÍ§ÊÃéÒ§¤ÇÒÁàª×èÍÁâÂ§ÊÍ§·Ò§ (Two-way Communication) ÃÐËÇèÒ§¤ÇÒÁµéÍ§¡ÒÃ
¤ÇÒÁÃÙéãËÁè (Supply Push) ã¹¡Åä¡¢Í§ÁËÒÇÔ·ÂÒÑÂ»¡µÔäÁèàÍ×éÍãËéà¡Ô´¡ÒÃàª×èÍÁâÂ§´Ñ§¡ÅèÒÇä´é ã¹¢³Ðà´ÕÂÇ¡Ñ¹ ¤Ç
à¢éÁá¢ç§·Ò§ÇÔªÒ¡ÒÃáÅÐ¡ÒÃ·ÓÇÔ¨ÑÃÍÂèÒ§µèÍà¹×èÍ§ §Ò¹Í§Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÏ «Öè§à»ç¹ÊèÇ¹Ë¹Öè§¢Í§ R&D Cluster ¨Ö
áÅÐ¾Ñ²Ò·ÕèÁÕ¤Ø³ÀÒ¾ÊÙ§ ¡ÒÃãËéºÃÔ¡ÒÃÇÔªÒ¡ÒÃ ¤Ó»ÃÖ¡ÉÒ¡ÒÃ¾Ñ²Òà·¤â¹âÅÂÕá¡èÀÒ¤àÍ¡ª¹ ãËé¤ÇÒÁªèÇÂàËÅ×ÍÀ

áÅÐÅ´¡ÒÃ¹Óà¢éÒà·¤â¹âÅÂÕ¨Ò¡µèÒ§»ÃÐà·È ÃÇÁ·Ñé§à»ç¹Ë¹èÇÂÊ¹ÑºÊ¹Ø¹¡ÒÃ¼ÅÔµºÑ³±ÔµãËéÁÕ¤ÇÒÁÃÙéáÅÐ·Ñ¡ÉÐ´éÒ¹

á¹Ç¤Ô´àÃ×èÍ§ R&D Cluster à»ç¹¤ÇÒÁ¤Ô´ÃÂÔàÃÔèÁ·Õè¨Ð¾Ñ²¹ÒÃÐºº¡ÒÃºÃÂÔËÒÃ¨Ñ´¡ÒÃ·Õèàª×èÍÁâÂ§¡ÒÃ·ÓÇÔ¨ÑÂ·ÕèÁÕ
áÅÐ¡ÒÃ¶èÒÂ·Í´à·¤â¹âÅÂÕãËéÁÒ¤àÍ¡ª¹ ¡ÒÃ´Óà¹Ô¹¡ÒÃ ³ Á¨¸. àÃÔèÁâ´Â¡ÒÃ»ÃÑºâ¤Ã§ÊÃéÒ§¡ÒÃºÃÔËÒÃãËéà¡Ô´ ¡ÒÃãªé·ÃÑ
BEC â´ÂáºèÃ§¡ÅØèÁ¡ÒÃºÃÔËÒÃáÅÐ´Óà¹Ô¹¡ÒÃÍí¡à»ç¹ 3 ¡ÅØèÁ¤×Í

- ¡ÅØèÁºÃÔËÒÃáÅÐ¹âÂºÒÂ ·ÓË¹éÒ·Õè¡Ó¡Ñº·ÔÈ·Ò§ §Ò¹ÇÔ¨ÑÂ §Ò¹ºÃÔ¡ÒÃÇÔªÒ¡ÒÃ áÅÐ¡ÒÃ¶èÒÂ·Í´à·¤â¹âÅÂÕ ãªé¡Åä¡ ¡Ô
and Budgeting System: PPBS) à»ç¹¡Åä¡ã¹¡ÒÃ¡Ó¡Ñº·ÔÈ·Ò§ â´ÂÁËÒÇÔ·ÂÒÅÑÂ¨Ð ¾Ô¨ÒÃ³Ò Input-Output ÊèÇ¹¡ÅØèÁ R&D Clu
ÃÇÁ¶Ö§¡ÒÃ¡ÓË¹´à§Ô¹à´×Í¹ÊèÇ¹à¾ÔèÁ¢Í§¾¾Ñ¡§Ò¹ ·Ñé§¹ÕéµéÍ§à»ç¹ä»µÒÁ¡® ÃÐàºÕÂº¢Í§ÁËÒÇÔ·ÂÒÅÑÂ

- ËéÍ§»¯ÔºÑµÔ¡ÒÃÇÔ¨ÑÂ (Research Lab) áÅÐ¡ÅØèÁÇÔ¨ÑÂ (R&D Cluster) ·ÕèÁÕ¡ÅØèÁÇÔ¨ÑÂ·ÓË¹éÒ·ÕèÇÔ¨ÑÂ ÊÃéÒ§ §
¡ÒÃ¾Ñ²¹Òà·¤â¹âÅÂÕá¡èÀÒ¤àÍ¡ª¹ ÃÇÁ·Ñé§à»ç¹Ë¹èÇÂÊ¹ÑºÊ¹Ø¹¡ÒÃ¼ÅÔµºÑ³±ÔµãËéÁÕ¤ÇÒÁÃÙéáÅÐ·Ñ¡ÉÐ´éÒ¹¡ÒÃÇÔ¨ÑÂ¢
Cluster) ·ÕèÁÕ¡ÅØèÁÇÔ¨ÑÂáÅÐÇÔªÒ¡ÒÃà»ç¹á¡¹ Í§¤ì»ÃÐ¡Í°¢Í§¡ÅØèÁÇÔ¨ÑÂ»ÃÐ¡Í°éÇÂ ËÑÇË¹éÒ¡ÅØèÁÇÔ¨ÑÂ ¹Ñ¡ÇÔ¨ÑÂÍ
ÃÐ´Ñº»ÃÔ--ÒàÍ¡ ¹Ñ¡ÈÖ¡ÉÒÃÐ´Ñº»ÃÔ--Òâ·

- Ë¹èÇÂ§Ò¹Ê¹ÑºÊ¹Ø¹ (Supporting Groups) ·ÓË¹éÒ·ÕèÊ¹ÑºÊ¹Ø¹ã¹àÃ×èÍ§§Ò¹¸ØÃ¡ÒÃ¢Í§â¤Ã§¡ÒÃáÅÐ¡ÒÃ ºÃÔËÒÃ§Ò¹·ÑèÇä»
»ÃÐÊÒ¹ÊÑÁ¾Ñ¹¸ìÃÐËÇèÒ§ÁËÒÇÔ·ÂÒÅÑÂ¡ÑºÀÒ¤ÍØµÊÒË¡ÃÃÁ (University-Industrial Liaison Office)

ÃÙ»áºº¡ÒÃºÃÔËÒÃ¨Ñ´¡ÒÃ¡ÅØèÁÇÔ¨ÑÂáºº R&D Cluster â´ÂËéÍ§»¯ÔºÑµÔ¡ÒÃÇÔ¨ÑÂà»ç¹ÈÙ¹Âì¡ÅÒ§¢Í§¡ÒÃ·ÓÇÔ¨ÑÂáÅÐË
·ÓãËé R&D Cluster ÊÒÁÒÃ¶ãªé·ÃÑ¾ÂÒ¡ÃãËéà¡Ô´»ÃÐâÂª¹ìÊÙ§ÊØ´ã¹¡ÒÃ¼ÅÔµºÑ³±Ôµ ¹Ñ¡ÇÔ¨ÑÂ ¡ÒÃ·Ó ÇÔ¨ÑÂ ¡ÒÃºÃÔ¡ÒÃ
â´ÂÁÕËÑÇË¹éÒËéÍ§»¯ÔºÑµÔ¡ÒÃáÅÐ¹Ñ¡ÇÔ¨ÑÃÍÒÇØâÊà»ç¹¾ÕèàÅÕéÂ§¹Ñ¡ÇÔ¨ÑÂ ã¹¢³Ðà´ÕÂÇ¡Ñ¹çàÍ×éÍãËéà¡Ô´ ¡ÒÃ·Ó§Ò
¢Öé¹ÍÂÙè¡Ñºâ¨·ÂìáÅÐËÑÇ¢éÍÇÔ¨ÑÂ áÅÐÃÇÁ·Ñé§à»ç¹¡ÒÃÃÐ´Á·ÃÑ¾ÂÒ¡Ã ¼ÙéÃÙé áÅÐ¤ÇÒÁ àªÕèÃÇªÒ- (Expertise) ¨Ò¡ËÁ
«Öè§¡èÍãËéà¡Ô¤ÇÒÁà¢éÁá¢ç§¢Í§ÃÐººÇÔ¨ÑÂ

¡ÒÃºÃÔËÒÃ¡ÒÃà§Ô¹à»ç¹ÍÕ¡»Ñ¨¨ÑÂË¹Öè§·Õè·ÓãËé R&D Cluster ÁÕ¤ÇÒÁÂ×´ËÂØè¹ã¹¡ÒÃºÃÔËÒÃáÅÐ¨Ñ´ËÒ§º»ÃÐÁÒ³ã¹Á
¹Ñ¡ÇÔ¨ÑÂáÅÐ¡ÅØèÁÇÔ¨ÑÂµéÍ§·Ó¢éÍàÊ¹Íâ¤Ã§¡ÒÃ à¾×èÍ¢ÍÃÑº¡ÒÃÊ¹ÑºÊ¹Ø¹¨Ò¡áËÅè§·Ø¹µèÒ§æ áÅÐà»ç¹ÅÑ¡É³Ð¾Öè§µ¹àÍ§
ÁÕË¹èÇÂ§Ò¹Ê¹ÑºÊ¹Ø¹·ÓË¹éÒ·ÕèãËéºÃÕ¡ÒÃ´éÒ¹ºÑ-ªÕáÅÐ¡ÒÃàºÔ¡¨èÒÂ ·Ñé§¹Õéà»ç¹ä»µÒÁ¤ÇÒÁÃÑº¼Ô´ªÍº¢Í§ËÑÇË¹éÒâ¤
¡ÒÃãªé·ÃÑ¾ÂÒ¡ÃáÅÐ§º»ÃÐÁÒ³µèÒ§æ ÊÒÁÒÃ¶ãªéÃèÇÁ¡Ñ¹ÃÐËÇèÒ§â¤Ã§¡ÒÃÇÔ¨ÑÂ áÅÐÃÐËÇèÒ§¡ÅØèÁÇÔ¨ÑÂä´é ·Ñé§
ºÃÔËÒÃ§º»ÃÐÁÒ³´Ñ§¡ÅèÒÇ ·ÓãËé R&D Cluster ÁÕ¤ÇÒÁÂ×´ËÂØè¹ã¹¡ÒÃºÃÔËÒÃ§º»ÃÐÁÒ³ÇÔ¨ÑÂ áÅÐÊÃéÒ§¤ÇÒÁà¢éÁá
Í§¤ì¡ÃÁÒ¡¡ÇèÒ¡ÒÃÍÂÙèÃÍ´à©¾ÒÐâ¤Ã§¡ÒÃÇÔ¨ÑÂÂèÍÂæ ËÃ×Íà©¾ÒÐ¡ÅØèÁÇÔ¨ÑÂà·èÒ¹Ñé¹

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§º»ÃÐÁÒ³Ê¹ÑºÊ¹Ø¹

Ë¹èÇÂ BEC ä´éÃÑº¡ÒÃÊ¹ÑºÊ¹Ø¹¡ÒÃ´Óà¹Ô¹§Ò¹¨Ò¡áËÅè§·Ø¹µèÒ§æ ä´éá¡è ÈÙ¹Âì¾Ñ¹¸ØÇÔÈÇ¡ÃÃáÅÐà·¤â¹âÅÂÕªÕÇÀÒ¾
ÃÒÂÃÑº¨Ò¡¡ÒÃÃÑº¨éÒ§ÇÔ¨ÑÂ §Ò¹ºÃÔ¡ÒÃÇÔªÒ¡ÒÃ·Ñé§¨Ò¡Ë¹èÇÂ§Ò¹ÀÒ¤ÃÑ°áÅÐàÍ¡ª¹

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·ÔÈ·Ò§¡ÒÃ´Óà¹Ô¹§Ò¹ÇÔ¨ÑÂ

Ë¹èÇÂï ÁÕ·ÔÈ·Ò§¡ÒÃ´Óà¹Ô¹§Ò¹ÇÔ¨ÑÂã¹¡ÅØèÁÇÔ¨ÑÂËÅÑ¡ 5 ¡ÅØèÁ¤×Í

- ¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕªÕÇÀÒ¾ÊÒËÃèÒÂ ( Algal Biotechnology ) : <link to Lab AGB> ¡ÅØèÁÇÔ¨ÑÂÁÕà»éÒËÁÒÂã¹¡ÒÃÇ
ãËéä´éà·¤â¹âÅÂÕã¹¡ÒÃà¾ÒÐàÅÕéÂ§ÊÒÈÃèÒÂ¢¹Ò´àÅç¡·ÕèÁÕ»ÃÐÊÔ·¸ÔÀÒ¾ÊÙ§ ÊÒÁÒÃ¶¶èÒÂ·Í´à·¤â¹âÅÂÕãËéá¡èÀÒ¤
¤ÇÒÁÃèÇÁÁ×Í¡ÑºÀÒ¤àÍ¡ª¹ã¹ÃÙ»áºº¢Í§ Spirulina consortium ã¹¡ÒÃãËé¤Ó»ÃÖ¡ÉÒ á¡é»Ñ-ËÒáÅÐà¾ÔèÁ »ÃÐÊÔ·¸ÔÀÒ¾ã¹¡ÒÃ
¾Ñ²Ò¡ÒÃàÅÕéÂ§ÊÒËÃèÒÂÊä»ÃÙÅÔ¹èÒ·ÕèÁÕ¼Å¼ÅÔµÊÙ§ã¹ÃÐ´ÑºÍØµÊÒÈ¡ÃÃÁ ¡ÒÃÇÔ¨ÑÂáÅÐ¾Ñ²Ò¡ÃÐºÇ¹¡ÒÃ / ÃÐºº
ä«ÂÒ¹Ô¹¨Ò¡ÊÒËÃèÒÂÊä»ÃÙÅÔ¹èÒ ¡ÒÃ¾Ñ²ÒÂÒµéÒ¹äÇÃÑÊ¨Ò¡ÊÒÈÃèÒÂ ¡ÒÃ¾Ñ²Òà·¤â¹âÅÂÕ¾×é¹°Ò¹ã¹¡ÒÃ ÈÖ¡ÉÒ¾Ñ²
«Öè§à»ç¹¡Ã´ä¢ÁÑ¹äÁèÍÔèÁµÑÇ ÁÕ¤Ø³ÊÁºÑµÔãªéà»ç¹ÍÒËÒÃàÊÃÔÁ ºÓÃØ§ÊØ¢ÀÒ¾áÅÐãªéã¹·Ò§¡ÒÃá¾·Âì ¡ÒÃ´Óà¹Ô¹§Ò¹

- ¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕà«¹à«ÍÃì ( Sensor Technology ) : <link to Lab SST> ¡ÅØèÁÇÔ¨ÑÂÁÕà»éÒËÁÒÂà¾×èÍ¾Ñ²ÒËÑÇÇ
à¾×èÍãªéã¹µÑÇÍÂèÒ§·Ò§´éÒ¹ÍÒËÒÃ ÊÔè§áÇ´ÅéÍÁ áÅÐ¡ÒÃá¾·Âì â´ÂÁÕ§Ò¹ÇÔ¨ÑÂã¹ 3 ¡ÅØèÁ§Ò¹ãË-è ´Ñ§¹Õé

- äºâÍà«¹à«ÍÃì (Bio sensors): §Ò¹ÇÔ¨ÑÂ·Õè´Óà¹Ô¹¡ÒÃ ä´éá¡è ¡ÒÃ¾Ñ²Ò à·¤¹Ô¤¡ÒÃµÃÖ§ biomaterial º¹ÊèÇ¹¢Í§·ÃÒ¹ÊÌ´ÔÇà«Í
biomembrane ·ÕèÁÕ catalytic reaction áÅÐ¤ÇÒÁ ¨Óà¾ÒÐà¨ÒÐ¨§ÊÙ§ µÅÍ´¨¹ÁÕ¡ÒÃ¾Ñ²Òà·¤¹Ô¤¡ÒÃ fabricate áÅÐ ÃÐºº¡ÒÃÇ
¼ÅÔµáÅÐ¡ÒÃãªé¢Í§ end-user µÑÇÍÂèÒ§ ä´éá¡è à«¹ à«ÍÃìµÃÇ¨ÇÑ´¹éÓµÒÅ¡ÅÙÂ¤ÊáÅÐ«Ùâ¤ÃÊ á»é§ ¼§ªÙÃÊ àÍ·¸Ò¹ÍÅ ÍÍÃì ¡Ò

- Chemically modified electrodes: ä´éá¡è ¡ÒÃâÁ´Ô¿ÒÂ´ÌÍÔàÅ¡â· Ã´´éÇÂÊÒÃà¤ÁÕáÅÐÇÔ¸Õ¡ÒÃ·Õèà¹é¹´éÒ¹à¤ÁÕä¿¿éÒ ¡ÒÃÊ
à¾×èÍ¾Ñ²Ò¡à«¹à«ÍÃì·Ò§¡ÒÃá¾·Âì ¡ÒÃ deposit Í¹ØÀÒ¤¢¹Ò´àÅç¢Í§ âÅËÐº¹¿ÔÅìÁâ¾ÅÔàÁÍÃìà¾×èÍà¾ÔèÁ catalytic reaction Ê
à¾×èÍ»éÍ§¡Ñ¹»¯Ô¡ÔÃÔÂÔÀÒÃÕ´Í¡«ì¨Ò¡ÊÒÃá·Ã¡ÊÍ´ à»ç¹µé¹

- Electroanalytical techniques: ¤×Í¡ÒÃ¾Ñ²Òà·¤¹Ô¤·Ò§à¤ÁÕä¿¿éÒ à¾×èÍà¾ÔèÁÈÑ¡ÂÀÒ¾ã¹¡ÒÃÇÔà¤ÃÒÐËìàªÔ§¤Ø³ÀÒ¾ à
detection ÁÒãªéã¹¡ÒÃÇÔà¤ÃÒÐËì»ÃÔÁÒ³¹éÓµÒÅ¡ÅÙâ¤ÊáÅÐ ¿ÃØ¡âµÊ ËÃ×Í¡ÒÃãªéà·¤¹Ô¤ stripping ÃèÇÁ¡ÑºâÁ´Ô¿ÒÂ´ì ÍÔà

- ¡ÅØèÁÇÔ¨ÑÂ¡ÒÃ¾Ñ²Ò¡ÃÐºÇ¹¡ÒÃ·Ò§ªÕÇÀÒ¾¢Í§¨ØÅÔ¹·ÃÕÂÌáÅÐâÃ§§Ò¹µé¹áºº¡ÒÃËÁÑ¡ ( Microbial Bioprocess Developm
<link to PDTI lab data> §Ò¹ã¹¡ÅØèÁÇÔ¨ÑÂ¹Õé»ÃÐ¡Íºä»´éÇÂËéÍ§»¯ÔºÑµÔ¡ÒÃ ÇÔ¨ÑÂµèÒ§æ ä´éá¡è Animal Cell Culture, Micr
State Fermentation, Fungal Biotechnology, Pilot Plant Fermentation ÁÕà»éÒËÁÒÂã¹¡ÒÃ·Ó ÇÔ¨ÑÂáÅÐ¾Ñ²Ò à¾×èÍ à¾ÔèÁÍ§
·ÕèÁÕ¤ÇÒÁÊÔ¤Ñ-ã¹ÍØµÊÒËÃÃÁà·¤â¹âÅÂÕªÕÇÀÒ¾ ä´éá¡è ÃÕÊµì áº¤·ÕàÃÕÂ áÅÐÃÒ ÁÕ¡ÒÃÈÖ¡ÉÒã¹ÃÐ´Ñº ªÕÇÇÔ·ÂÔ
áÅÐ¹ÓÁÒãªé ã¹¡ÒÃ¾Ñ²ÒÊÔÂ¾Ñ¹¸ØìÀà¾×èÍà¾ÔèÁÈÑ¡ÂÀÒ¾¡ÒÃ¼ÅÔµ ÊÒÃÁÙÅ¤èÒÊÙ§ (high value product) »ÃÐÂØ¡µìãªéã
ÁØè§à»éÒ¡ÒÃ¾Ñ²Ò¡ÒÃàÅÕéÂ§¨ØÅÔ¹·ÃÕÂÌã¹ÍÒËÒÃ àËÅÇáÅÐÍÒËÒÃá¢ç§ã¹ÃÐ´ÑºËéÍ§»¯ÔºÑµÔ¡ÒÃáÅÐâÃ§§Ò¹ µé¹áºº ÁÓ

¡ÒÃÈÖ¡ÉÒã¹àÃ×èÍ§¡ÒÃ¢ÂÒÂ¢¹Ò´¡ÒÃ¼ÅÔµ recombinant protein ¢Í§äÇÃÑÊä¢éàÅ×Í´ÍÍ¡â´Âà«ÅÅìáÁÅ§ «Öè§ÁÕà»éÒ ËÁÒÂ
¡ÒÃµÔ´àª×éÍä¢éàÅ×Í´ÍÍ¡·Õè¼ÅÔµä´éàÍ§ÀÒÂã¹»ÃÐà·È à¾×èÍªèÇÅ´¤èÒãªé¨èÒÂ¡ÒÃ¹Óà¢éÒ ¨Ò¡µèÒ§»ÃÐà·È à¾ÔèÁ¤ÇÒÁÊ

¡ÒÃÈÖ¡ÉÒ ¡ÃÐºÇ¹¡ÒÃËÅÑ§¡ÒÃà¡ç°à¡ÕèÂÇ¢Í§ Bacillus subtilis à¾×èÍãªéà»ç¹â»ÃäºâÍµÔ¡ã¹ ÍØµÊÒË¡ÃÃÁ

- ¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕáÅÐÇÔÈÇ¡ÃÃÁÍÒËÖÃ ( Food Technology and Engineering ) : <link to lab data> ¡ÅØèÁÇÔ¨ÑÂ´Óà¹Ô
¡ÒÃ¦èÒà ª×éÍ´éÇÂ¤ÇÒÁÃéÍ¹ «Öè§ÁÕà»éÒËÁÒÂã¹¡ÒÃÊÃéÒ§ÈÑ¡ÂÀÒ¾áÅÐ ¤ÇÒÁÊÒÁÒÃ¶´éÒ¹¡ÒÃ¦èÒà ª×éÍ´éÇÂ¤ÇÒÁÃéÍ¹à
flow ã¹¡ÃÐºÇ¹¡ÒÃ¼ÅÔµÇÔÈÇ¡ÃÃÁªÕÇÀÒ¾áºº µèÍà¹×èÍ§ «Öè§ÁÕà»éÒËÁÒÂ¡ÒÃËÖ¡ÉÒà¾×èÍãËéà¢éÒã¨¶Ö§ÃÙ»áºº¡ÒÃ äËÁ
¡ÒÃ¼ÅÔµ·Ò§ÇÔÈÇ¡ÃÃÁªÕÇÀÒ¾ÀÒÃãµéÊÀÒÇÐ ÍØ³ËÀÙÁÔÊÙ§ ÍÑ¹¨Ðà»ç¹Í§¤ì¤ÇÒÁÃÙé¹Óä»ÊÙè¡ÒÃÍí¡áºº ÃÐºº·Õè¶Ù¡µéÍ§
processing) ãËé´ÕÃÔè§ ¢Öé¹

- ¡ÅØèÁÇÔ¨ÑÂªÕÇÇÔ·ÂÒÃÐººáÅÐªÕÇÊÒÃÊ¹à·È ( Systems Biology and Bioinformatics ) : <link to lab data> ¡ÅØèÁÇÔ¨ÑÂÁÕ

ËÁÒÂà¹é¹¡ÒÃ»ÃÐÂØ¡µìãªéà¤Ã×èÍ§Á×Í´éÒ¹ªÕÇÊÒÃÊ¹à·ÈáÅÐà·¤Ô¤´éÒ¹¡ÒÃÊÃéÒ§áºº¨ÓÅÍ§¢Í§à«ÅÅì ÃÇÁ¶Ö§¡ÒÃ ÇÔà¤ÃÒ
ÊÑ§à¤ÃÒÐËìáÅÐ¼ÅÔµ¡Ã´ä¢ÁÑ¹·ÕèÁÕ»ÃÐâÂª¹ìã¹àªÔ§¡ÒÃá¾·Âìã¹ÊÔè§ÁÕªÕÇÔµà«ÅÅìà´ÕèÂÇ àªè¹ ÂÕÊµì à¾×èÍà»ç¹¢éÍÁ
ã¹ËÑÇÁÑ¹ÊÓ»ÐËÅÑ§à¾×èÍãªé»ÃÑº»ÃØ§¤Ø³ÅÑ¡É³Ð¢Í§á»é§ãËéµÃ§µÒÁ¤ÇÒÁµéÍ§¡ÒÃ¢Í§µÅÒ´ áÅÐ¡ÒÃãªéáºº ¨ÓÅÍ§¡Ô¨¡ÃÃ
µÑÇÍÂèÒ§§Ò¹ÇÔ¨ÑÂ àªè¹ ¡ÒÃÇÔà¤ÃÒÐËìáÅÐÊÃéÒ§áºº¨ÓÅÍ§àÁµÒâºÅÔ«ÖÁ¢Í§ÅÔ»Ô´ã¹ÂÕÊµì à¾×èÍ »ÃÑº»ÃØ§¤ÇÒÁÊÒÁ
¡ÒÃÇÔà¤ÃÒÐËìâ¤Ã§ÊÃéÒ§¢Í§ÇÔ¶Õ¡ÒÃÊÑ§à¤ÃÒÐËì¡Ã´¹ÔÇ¤ÅÕÍÔ¡ã¹àª×éÍÁÒÅÒàÃÕÂ Plasmodium falciparum à¾×èÍ¡ÓË¹´

{mospagebreak title=ºØ¤ÅÒ¡Ã}

ºØ¤ÅÒ¡Ã¢Í§Ë¹èÇÂ Ï

¡ÒÃºÃÔËÒÃ¨Ñ´¡ÒÃ¢Í§Ë¹èÇÂÏ ¨ÐÍÂÙèÀÒÂãµé¡ÒÃ´ÙáÅ¢Í§¤³ÐÍ¹Ø¡ÃÃÁ¡ÒÃºÃÔËÒÃË¹èÇÂÏ áÅÐ¡ÒÃºÃÔËÒÃâ´Â ·ÕÁ¼ÙéºÃÔ
â´ÂÁÕºØ¤ÅÒ¡Ã¨Ò¡Ë¹èÇÂ§Ò¹·ÕèÁÕ¤ÇÒÁÃèÇÁÁ×Í¡Ñ¹ÁÒÃèÇÁ¡Ñ¹»¯ÔºÑµÔ§Ò¹ ·Ñé§ Á¨¸. áÅÐ Èª.

{mospagebreak title=¼Å¡ÒÃ´Óà¹Ô¹<br>§Ò¹ 1}

¼Å¡ÒÃ´Óà¹Ô¹§Ò¹

1. à·¤â¹âÅÂÕ·Õè¹Óä»ãªé»ÃÐâÂª¹ìáÅéÇáÅÐ¾ÃéÍÁ¶èÒÂ·Í´à·¤â¹âÅÂÕ

¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕÊÒËÃèÒÂ

• à·¤â¹âÅÂÕ¡ÒÃ¼ÅÔµÊÒËÃèÒÂÊä»ÃÙÅÔ¹èÒ : à·¤â¹âÅÂÕ¹Õéà»ç¹»ÃÐâÂª¹ìÍÂèÒ§ÁÒ¡µèÍÍØµÊÒË¡ÃÃÁ¡ÒÃ¼ÅÔµÊÒË
ä´éÁÕ¡ÒÃ¾Ñ²¹ÒÃÐºº¡ÒÃàÅÕéÂ§ÊÒËÃèÒÂÊä»ÃÙÅÔ¹èÒ«Öè§àÃÔèÁ¨Ò¡¡ÒÃãªé¹éÓ·Ôé§¨Ò¡âÃ§§Ò¹á»é§ÁÑ¹ÊÓ»ÐËÅÑ§ ã¹Ã
«Öè§ÊÒÁÒÃ¶¼ÅÔµ¼ÅÔµÀÑ³±ìáËé§·ÕèÁÕâ»ÃµÕ¹ÃéÍÂÅÐ 55 ¤èÒ¤ÇÒÁª×é¹ ÃéÍÂÅÐ 7 áÅÐã¹¡ÒÃ¤Ó¹Ç³¡ÒÃÅ§·Ø¹ÊÓËÃÑº¡Ò
»ÃÐÁÒ³à§Ô¹Å§·Ø¹ $6,000 – $7,000 µèÍµÑ¹ »Ñ¨¨ØºÑ¹ä´éÁÕ¡ÒÃ¶èÒÂ·Í´à·¤â¹âÅÂÕ¹ÕéãËéàÍ¡ª¹·Õè¼ÅÔµÊÒËÃèÒÂÊä»Á

¡ÅØèÁÇÔ¨ÑÂ¡ÒÃ¾Ñ²Ò¡ÃÐºÇ¹¡ÒÃ·Ò§ªÕÇÀÒ¾¢Í§¨ØÅÔ¹·ÃÕÂÌáÅÐâÃ§§Ò¹µé¹áºº¡ÒÃËÁÑ¡

• à·¤â¹âÅÂÕ¡ÒÃ¼ÅÔµÂÕÊµì¢¹Á»Ñ§ã¹ÃÐ´ÑºÍØµÊÒË¡ÃÃÁ : Ë¹èÇÂÏ ÁÕÊÒÂ¾Ñ¹¸ØìÂÕÊµì·ÕèÁÕ¤Ø³ÊÁºÑµÔ´Õ·Õè¤Ñ´
·Ñé§¹Õéä´éÁÕ¡ÒÃÃÑº¨éÒ§¼ÅÔµÂÕÊµìãËé¡ÑºË¹èÇÂ§Ò¹·Õèµéí§¡ÒÃä´éã¹»ÃÔÁÒ³ÁÒ¡æ ÍÕ¡´éÇÂ à¾×èÍ¡ÒÃ·´ÅÍ§µÅÒ´áÅÐ/ Ë

• à·¤â¹âÅÂÕ¡ÒÃ¼ÅÔµ Bacillus subtilis : Ë¹èÇÂÏ ÊÒÁÒÃ¶¼ÅÔµ B. subtilis ã¹ ¶Ñ§»¯Ô¡Ã³ì¢¹Ò´ 150 áÅÐ 1,500 ÅÔµÃ áÅ

• ¡ÒÃ¢ÂÒÂ¢¹Ò´¡ÒÃ¼ÅÔµ : ¡ÒÃ¾Ñ²¹Ò¡ÃÐºÇ¹¡ÒÃËÁÑ¡áººÍÒËÒÃá¢ç§ÊÓËÃÑº¡ÒÃ¼ÅÔµÊÒÃ Umami ã¹ÃÐ´ÑºâÃ§ §Ò¹µé¹áºº
à»ç¹ÊÒÃ·Õèä´é¨Ò¡¡ÒÃËÁÑ¡¶ÑèÇàËÅ×Í§â´ÂãªáÉ¨ØÅÔ¹·ÃÕÂì â´ÂÁÕ¡Ã´ÍÐÁÔâ¹¡ÅÙµÒàÁ· (Glumamte) à»ç¹ÊÒÃ»ÃÐ¡Íº·ÕèÊÓ¤Ñ
àº×éÍ§µé¹ Èª. ä´éÃèÇÁ¡Ñºº ÃÔÉÑ·àÍ¡ª¾Ñ²¹Ò¡ÃÐºÇ¹¡ÒÃ¼ÅÔµ ÈÖ¡ÉÒ¡ÒÃËÁÑ¡¶ÑèÇàËÅ×Í§â´ÂãªáÉ¨ØÅÔ¹·ÃÕÂì Bacillus subtilis
¨Ö§ãËé·Ò§Ë¹èÇÂ BEC ¹ÓÁÒ·´ÅÍ§¢ÂÒÂ¢¹Ò´¡ÒÃ¼ÅÔµµÑÇÍÂèÒ§ã¹ÃÐ´ÑºâÃ§ §Ò¹µé¹áºº â´Â·Ó¡ÒÃ·´ÅÍ§¼ÅÔµ ·Ñé§¡ÃÐºÇ¹¡ÒÃ
¼Å¨Ò¡¡ÒÃËÁÑ¡ã¹¡ÃÐºÇ¹¡ÒÃ¼ÅÔµâ´ÂÍÒËÒÃàËÅÇ ¾ºÇèÒÁÕ¡ÅÔè¹´ÕáÅÐÁÕ glutamate ÍÂÙèã¹»ÃÔÁÒ³·ÕèÊÙ§µÒÁ·Õèµéí§¡
ã¹ÊèÇ¹¡ÃÐºÇ¹¡ÒÃËÁÑ¡áººÍÒËÒÃá¢ç§ã¹¶Ñ§ËÁØ¹ (rotating drum bioreactor) «Ö§à»ç¹ÇÔ¸Õ¡ÒÃËÁÑ¡·ÕèÃÇÁ¢éí´Õ
¢Í§¡ÒÃËÁÑ¡áººá¢ç§â´ÂµÃ§áµèä´éà¾ÔèÁÃÐºº¡ÒÃÃÐºÒÃÍÒ¡ÒÈ·Õè´Õ ä´é¼ÅÔµÀÑ³±ì·ÕèÁÕ¤Ø³ÀÒ¾áÅÐ»ÃÔÁÒ³ glutamate Ê
¢³Ð·ÕèÂÑ§¤§¤Ø³ÀÒ¾¢Í§¼ÅÔµÀÑ³±ìãËéÍÂÙèã¹ÃÐ´Ñº·Õè¾Ö§¾Íã¨ áÅÐÊÒÁÒÃ¶ãªéà»ç¹¢éÍÁÙÅã¹¡ÒÃ¼ÅÔµàªÔ§ÍØµÊÒË¡ÃÃ

¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕà«¹à«ÍÃì

• à·¤¹Ô¤ Screen-Printed Electrode ÊÓËÃÑºÇÔà¤ÃÒÐÈì»ÃÔÁÒ³¹éÓµÒÅã¹àÅ×Í´ : ä´é·Ó¡ÒÃÈÖ¡ÉÒ¾Ñ²¹Ò¡ÒÃµÃÖ§ àÍ¹ä
reproducibility ä´éã¹»ÃÔÁÒ³ÁÒ¡ «Ö§ÍÂÙèÃÐËÇèÒ§¡ÒÃ¾Ñ²¹ÒÊÃéÒ§à¤Ã×èÍ§µé¹áºº à¤Ã×èÍ§ÇÑ´¹éÓµÒÅ¡ÅÙâ¤Ê·Õè¨Ð ¼ÅÔ

¡ÅØèÁÇÔ¨ÑÂà·¤â¹âÅÂÕáÅÐÇÔÈÇ¡ÃÃÁÍÒËÒÃ

• ¡ÒÃ¾Ñ²¹Ò¡ÒÃ¦èÒàªà×éÍ´éÇÂ¤ÇÒÁÃéÍ¹ã¹¡ÃÐºÇ¹¡ÒÃ¼ÅÔµÍÒËÒÃ : ä´éÁÕ¡ÒÃÈÖ¡ÉÒ¡ÃÐºÇ¹¡ÒÃ¦èÒàªà×éÍÍÒËÒÃã¹ ÀÒª
value ¢Í§¼ÅÔµÀÑ³±ìÍÒËÒÃª¹Ô´µèÒ§æ à¾×èÍà»ç¹¤èÒÁÒµÃ°Ò¹áÅÐãªéã¹¡ÒÃ¾Ñ²¹Òâ»Ãá¡ÃÁÊÓËÃÑºãªé ¡ÑºËÁéÍ¦èÒàª×éÍ·Õè
â´Âà©¾ÒÐ¾ÅÒÊµÔ¡ «Ö§¨ÐªèÇÂÅ´àÇÅÒáÅÐ¤èÒãªé¨èÒÂã¹¡ÒÃ¾Ñ²¹Ò ¼ÅÔµÀÑ³±ìÍÒËÒÃãËÁèæ Å§ä´éÍÂèÒ§ÁÒ¡

¡ÅØèÁÇÔ¨ÑÂªÕÇÇÔ·ÂÒÃÐººáÅÐªÕÇÊÒÃÊ¹à·È

• ¡ÒÃ¾Ñ²¹Ò¼ÅÔµÀÑ³±ì : ¡ÒÃÊÃéÒ§«Í¾áÇÃìáºº¨ÓÅÍ§àª×éÍÂÕÊµì áÅÐáºº¨ÓÅÍ§àª×éÍÇÑ³âÃ¤´éÇÂà·¤¹Ô¤´éÒ¹ªÕÇÇÔ·Â
ä´é¾Ñ²¹Òáºº¨ÓÅÍ§¢Í§ÂÕÊµìã¹ÃÐ´Ñº¨Õâ¹Á¢Öé¹à¾×èÍãªé¨ÓÅÍ§áÅÐ·Ó¹ÒÂ¼Å¢Í§ÂÕ¹ËÃ×ÍàÍ¹ä«ÁìµèÒ§æ µèÍ ¡ÒÃà¨ÃÔ-àµÕºâµ
â´ÂÊÒÁÒÃ¶ÊÃéÒ§à¤Ã×Í¢èÒÂàÁµÒâºÅÔ«ÖÁ·ÕèÁÕ¤ÇÒÁ¨Óà¾ÓÐµèÍÂÕÊµìä´éÊÓàÃç¨ ¨Ò¡éÍÁÙÅµèÒ§æ ´éÒ¹¨Õâ¹Á áÅÐãª
ÇÔà¤ÃÒÐËìà»ÃÕÂºà·ÕÂºâ¤Ã§ÊÃéÒ§¢Í§à¤Ã×Í¢èÒÂ¡ÒÃÊÑ§à¤ÃÒÐËìÅÔ»Ô´áÅÐÇÔà¤ÃÒÐËì¤èÒ¿ÅÑ¡«ì¢Í§»¯Ô¡ÔÃÔÂÒªÕ
¡ÒÃ¼ÅÔµÅÔ»Ô´ã¹àª×éÍÃÒÊÒÃ¾Ñ¹¸ØìãËÁè áÅÐä´é¾Ñ²¹Òáºº¨ÓÅÍ§àª×éÍÇÑ³âÃ¤¨Ò¡¢éÍÁÙÅ¨Õâ¹Á à¾×èÍãªéËÒà»éÒËÁÒÃãË
¢Í§à¤Ã×Í¢èÒÂ¡ÒÃÊÃéÒ§ÊÒÃ¡Ã´ä¢ÁÑ¹áÅÐ¡Ã´ÔÇ¤ÅÕÍÔ¤«Öè§¨Óà»ç¹µèÍ¡ÒÃ´ÓÃ§ªÕÇÔµ¢Í§à«ÅÅì à¹×èÍ§¨Ò¡¡ÒÃ¢Ò´ËÒÂä»¢
«Ö§à·¤¹Ô¤áÅÐ«Í¾áÇÃì·Ò§ªÕÇÊÒÃÊ¹à·È·Õè¾Ñ²¹Ò¢Öé¹¨ÐÊÒÁÒÃ¶ãªéà»ç¹ virtual lab â´Â¡ÒÃãªé¡ÒÃ·´ÅÍ§¨ÓÅÍ§º¹¤ÍÁ¾ÔÇà
·´ÅÍ§à»ÅÕèÂ¹á»Å§¢Í§à¤Ã×Í¢èÒÂàÁµÒâºÅÔ«ÖÁã¹ÃÐ´Ñ¢Í§ÂÕ¹ à¾×èÍ¹Óä»ÊÙè¡ÒÃÍí¡áºº»ÃÑº»ÃØ§¤ØÊÁºÑµÔ¢Í§à«ÅÅì·Õèµ

{mospagebreak title=¼Å¡ÒÃ´Óà¹Ô¹<br>§Ò¹ 2}

2. §Ò¹ºÃÔ¡ÒÃ·Ò§ÇÔªÒ¡ÒÃ

Ë¹èÇÂÏ ä´é¶èÒÂ·Í´à·¤â¹âÅÂÂÕ·Õèä´é¾Ñ²¹Ò¢Öé¹áÅÐãËéºÃÔ¡ÒÃ·Ò§à·¤Ô¤µèÍÀÒ¤ÍØµÊÒË¡ÃÃÁÍÂèÒ§µèÍà¹×èÍ§ â´ÂÁÕ»ÃÐà
¡ÒÃãËé¤Ó»ÃÖ¡ÉÒ ºÃÔËÒÃ »ÃÐàÁÔ¹â¤Ã§¡ÒÃ ¡ÒÃ·´ÊÍº ·´ÅÍ§ ãËéàªèÒÍØ»¡Ã³ìáÅÐâÃ§§Ò¹µé¹áºº ¡ÒÃÇÔà¤ÃÒÐËì·Ò§à¤ÁÕ Ê
â´ÂÁÕµÑÇÍÂèÒ§¡ÒÃãËéºÃÔ¡ÒÃ ´Ñ§¹Õé

- ¡ÒÃ¼ÅÔµ pressed yeast ãËé¡ÑººÃÔÉÑ· Bioman
- ¡ÒÃãËéºÃÔ¡ÒÃâÃ§§Ò¹µé¹áºº´éÒ¹¡ÒÃ·´ÅÍ§¼ÅÔµ¨ØÅÔ¹·ÃÕÂì Bacillus subtilis à¾×èÍãªéà»ç¹ â¤Ã§¡ÒÃ¹ÓÃèÍ§à¾×èÍ¡ÒÃ·´ÅÍ§
- ¡ÒÃãËéºÃÔ¡ÒÃâÃ§§Ò¹µé¹áºº¡ÒÃËÁÑ¡·´ÅÍ§¼ÅÔµà¾×èÍãªéºÓºÑ´¹éÓàÊÕÂã¹¹Ò¡Ø§ãËé¡ÑººÃÔÉÑ·µèÒ§æ

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3. ¡ÒÃ¶èÒÂ·Í´à·¤â¹âÅÂÕáÅÐà¼Âá¾ÃèÍ§¤ì¤ÇÒÁÃÙé¨Ò¡§Ò¹ÇÔ¨ÑÂ

Ë¹èÇÂÏ ä´é¨Ñ´»ÃÐªØÁÊÑÁÁ¹Ò áÅÐ½Ö¡ÍºÃÁàªÔ§»¯ÔºÑµÔ¡ÒÃ ã¹ËÑÇ¢éÍµèÒ§æ

- Mass Cultivation of Spirulina
- Regional mini-symposium on bio sensor and chemical sensor technology
- Bioinformatics as a Tool for Gene Manipulation
- Metabolic Engineering and Functional Genomics
- Advanced Fermentation Technology
- Practical approach to ferment ation technology workshop

- Comparative microbial genomics workshop

- Animal Cell Culture and Applications

4. ¡ÒÃ¾Ñ²ÒºØ¤ÅÒ¡Ã

ã¹ªèÇ§»Õ§º»ÃÐÁÒ³ 2543-2550 ¢Í§¡ÒÃ´Óà¹Ô¹§Ò¹ Ë¹èÇÂÏ ä´éÊ¹ÑºÊ¹Ø¹¡ÒÃ¼ÅÔµºÑ³±ÔµÈÖ¡ÉÒ¨Ó¹Ç¹ 246 ¤¹ã¹ÃÐ´Ñº»ÃÔ--Ò
58 ¤¹ã¹ÃÐ´Ñº»ÃÔ--ÒàÍ¡ 16 ¤¹ áÅÐÃÐ´Ñº»ÃÔ--Òâ· 74 ¤¹ Ë¹èÇÂÏ ¡ÓË¹´à»éÒËÁÒÂ¢Í§ÊÑ´ÊèÇ¹ ¨Ó¹Ç¹¹Ñ¡ÈÖ¡ÉÒ»ÃÔ--Òâ·áÅÐ »Á
µÒÁÅÓ´Ñº â´Âã¹»Ñ¨¨ØºÑ¹ÁÕÊÑ´ÊèÇ¹¹Ñ¡ÈÖ¡ÉÒ»ÃÔ--Òâ·µèÍºØ¤ÅÒ¡Ã»ÃÔ--ÒàÍ¡ (FTE) 4.1 áÅÐ 0.7 ÊÓËÃÑº¹Ñ¡ ÈÖ¡ÉÒ»ÃÔ--Ò

5. ÊÔ·¸ÔºÑµÃ

Ë¹èÇÂÏ ÁÕà·¤â¹âÅÂÕ·Õèä´éÂ×è¹¨´ÊÔ·¸ÔºÑµÃáÅéÇ ¨Ó¹Ç¹ 6 àÃ×èÍ§ ´Ñ§¹Õé

- DNA probes ·Õè¨Óà¾ÒÐµèÍ¨ØÅÔ¹·ÃÕÂìã¹¡ÅØèÁ Methanogens ( »Õ 2545)

- ¡ÒÃáÂ¡ÅÓ´ÑºàºÊáÅÐ¡Ã´ÍÐÁÔâ¹¢Í§ÂÕ¹ D 12 desaturase ¢Í§ Mucor rouxii ATCC24905 ( »Õ 2542)

- ¡ÒÃ¾Ñ²ÒÅÓ´Ñº¹ÔÇ¤ÅÕâÍä·´ìáÅÐÅÓ´Ñº¡Ã´ÍÐÁÔâ¹¢Í§ÂÕ¹ D 6 desaturase ¢Í§ Mucor rouxii ÊÒÂ¾Ñ¹¸Øì ATCC24905 ( »Õ 25

- Nucleotide and amino acid sequences of D 6 -desaturase isoform II of Mucor rouxii ATCC 24905, Thai Patent Filed: January, 2004

- Development of D 6 -desaturase isoform II enzyme of Mucor rouxii involved in synthesis of essential fatty acids, gamma-linolenic and stearidonic acids by site-directed mutagenesis, Thai Patent Filed: 28 September, 2005

- ¡ÒÃ¾Ñ²Ò¡ÃÐºÇ¹¡ÒÃÊÃéÒ§¡Ã´ä¢ÁÑ¹·ÕèÁÕ¾Ñ¹¸Ð¤ÙèÊÒÁ¾Ñ¹¸Ðã¹âÁàÅ¡ØÅ , gamma-linolenic acid ËÃ×Í GLA áÅÐ alpha-li
¡ÒÃ¾Ñ²ÒÅÓ´Ñº¹ÔÇ¤ÅÕâÍä·´ìáÅÐÅÓ´Ñº¡Ã´ÍÐÁÔâ¹¢Í§ÂÕ¹à´ÅµéÒ 6 -´ÕáÊ··ÙàÃÊ ( ? 6-desaturase) áÅÐÂÕ¹à´ÅµéÒ 12 -´Õ áÊ
( Spirulina platensis ) ã¹à«ÅÅìÂÕÊµì Saccharomyces cerevisiae , Thai Patent Filed: October 2006

6. ÃÒ§ÇÑÅ·Õèä´éÃÑº

- Ë¹èÇÂ»¯ÔºÑµÔ¡ÒÃÏ ä´éÃÑºÃÒ§ÇÑÅÇÔ·ÂÒÈÒÊµÃìáÅÐà·¤â¹âÅÂÕ ÁÙÅ¹Ô¸Ôâ·àÃà¾×èÍ¡ÒÃÊè§àÊÃÔÁÇÔ·ÂÒÈÒÊµÃì »ÃÐ
ÊÒÁÒÃ¶¹Ó¤ÇÒÁÃÙé·Ò§ÇÔ·ÂÒÈÒÊµÃìáÅÐà·¤â¹âÅÂÕÁÒ¾Ñ²Ò¨¹ä´é¼ÅÔµÀÑ³±ì ¡ÃÐºÇ¹¡ÒÃ áÅÐà·¤â¹âÅÂÕ·ÕèÊÒÁÒÃ¶¶è

- ÃÒ§ÇÑÅ¼Å§Ò¹ÇÔ¨ÑÂ»ÃÐ¨Ó»Õ 2545 ÊÒ¢ÒÇÔÈÇ¡ÃÃÁÈÒÊµÃìáÅÐÍØµÊÒËÖ¡ÃÃÁÇÔ¨ÑÂ ¨Ò¡ÊÓ¹Ñ¡§Ò¹¤³Ð¡ÃÃÁ¡ÒÃÇÔ¨ÑÂ
»ÃÐÊÔ·¸ÔÀÒ¾ÊÙ§áºµÃÖ§à«ÅÊÓËÃÑºâÃ§§Ò¹ÍØµÊÒËÖ¡ÃÃÁà¡ÉµÃ <link to ECoWaste>

- ÃÒ§ÇÑÅ´Õà´è¹´éÒ¹¾ÅÑ§§Ò¹ãËÁèáÅÐËÁØ¹àÇÕÂ¹¢Í§»ÃÐà·Èä·Â»Õ 2546 »ÃÐàÀ· Off-Grid ¢Í§¡ÃÁ¾Ñ²Ò ¾ÅÑ§§Ò¹·´á·¹áÅÐ
Êè§àÊÃÔÁ¡ÒÃ¼ÅÔµ¡êÒ«ªÕÇÀÒ¾¨Ò¡ÃÐººÓºÑ´¹éÓàÊÕÂà¾×èÍà»ç¹¾ÅÑ§§Ò¹·´á·¹â¹âÃ§§Ò¹á»é§ÁÑ¹ÊÓ»ÐËÅÑ§ áÅÐä´éÃÑº
ã¹ÃÐ´ÑºÀÙÁÔÀÒ¤ÍÒà«ÕÂ¹»ÃÐ¨Ó»Õ 2546 «Ö§à»ç¹¾Å§Ò¹ÇÔ¨ÑÂ·Õè¹Ó¤ÇÒÁÃÙéà¡ÕèÂÇ¡ÑºÃÐººÓºÑ´¹éÓàÊÕÂã¹ Ëé§»¯Ó
ºÓºÑ´¹éÓàÊÕÂã¹ÊÀÒÇÐ¡ÒÃã ªé§Ò¹¨ÃÔ§¢Í§»ÃÐà·È â´ÂäÁèà»Å×Í§à¹×éÍ·ÕèáÅÐªèÇÂ»ÃÐËÂÑ´¾ÅÑ§§Ò¹ä¿¿éÒ ÊÒÁÒÃ¶ ºÓº
ÊÓËÃÑºâÃ§§Ò¹ÍØµÊÒËÖ¡ÃÃÁà¡ÉµÃ áÅÐÂÑ§ä´é¡êÒ«ªÕÇÀÒ¾à»ç¹¾ÅÑ§§Ò¹·´á·¹éÓÁÑ¹ <link to ECoWaste>

{mospagebreak title=¼Å¡ÒÃ´Óà¹Ô¹<br>§Ò¹ 4}

7. ¡ÒÃàÊ¹Í¼Å§Ò¹áÅÐÊÔè§µÕ¾ÔÁ¾ì

¡ÒÃàÊ¹Í¼Å§Ò¹ã¹ªèÇ§»Õ§º»ÃÐÁÒ³ 2536-2550 Ë¹èÇÂÏ ÁÕ¼Å§Ò¹µÕ¾ÔÁ¾ì ã¹ÇÒÃÊÒÃ¹Ò¹ÒªÒµÔ 76 àÃ×èÍ§ ÇÒÃÊÒÃÃÐ´Ñ
àÃ×èÍ§ â´Âà»ç¹¡ÒÃàÊ¹Í¼Å§Ò¹ã¹ÃÐ´Ñº¹Ò¹ÒªÒµÔ 201 àÃ×èÍ§ áÅÐÃÐ´ÑºªÒµÔ 319 àÃ×èÍ§

ÇÒÃÊÒÃ·Ò§ÇÔªÒ¡ÒÃ


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´Ñª¹ÕªÕéÇÑ´¡ÒÃ´Óà¹Ô¹§Ò¹ (Key Performance Index, KPI)

Ë¹èÇÂÏ ä´éÁÕ¡ÒÃ¹Ó KPI ÁÒãªéà¾×èÍ»ÃÐàÁÔ¹¡ÒÃ´Óà¹Ô¹§Ò¹ã¹´éÒ¹µèÒ§æ ä´éá¡è »ÃÐÊÔ·¸ÔÀÒ¾ »ÃÐÊÔ·¸Ô¼Å ¼ÅÔµÀÒ
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