研究專長

1. 超音波應用。 2. 組織工程。 3. 臨床牙科研究。

教學榮譽獎項或競賽優勝事蹟

1. 於2010中區技專院校產學合作論壇暨研發成果展發表『骨質密度檢測參考輔具』榮獲特優。
2. 於2010中區技專院校產學合作論壇暨研發成果展發表『長效皮膚標記染料』榮獲優等。
3. 於2010第五屆國際醫學影像暨放射科學研討會,壁報論文“以輔具配和牙根尖片攝影進行齒槽骨厚評估”,獲得大會『第二名』獎項鼓勵。
4. 於2008年「中區技專院校校際聯盟」研發成果網路聯合發表會醫護類:超音波植牙骨整合加速器，榮獲特優！
5. 2008 醫學工程學會傑出論文獎。
6. 94 學年度中臺科技大學績優教師。

著作目錄 Publication List：

A. 期刊

1. S.K. Hsu, W.T. Huang, B.S. Liu, S.M. Li, H.T. Cheng, **C.J. Chang*.** Effects of near-field ultrasound stimulation on new bone formation and osseointegration of dental titanium implants in vitro and in vivo, ***Ultrasound in Medicine & Biology, 2011,37(3):403-416*** **(SCI)**. **(Corresponding author)**
2. **C.J. Chang***. The Effect of Pulse-Released Nerve Growth Factor from Genipin-Crosslinked Gelatin in Schwann cell seeded Polycaprolactone Conduit on Large-gap Peripheral Nerve Regeneration. ***Tissue Engineering***, ***2009 Mar;15(3):547-57.*** **(SCI)**
3. **C.J. Chang***. Effects of nerve growth factor from genipin-crosslinked gelatin in polycaprolactone conduit on peripheral nerve regeneration–*in vitro* and *in vivo*. ***Journal of Biomedical Materials Research (part A), 2009 Nov;91(2):586-96*** **(SCI)**

4. **C.J. Chang**, P.L. Liao, S.h. Hsu*, H. Chang, C.S. Chang. Effects of unidirectional permeability in asymmetric poly(DL-lactic acid-co-glycolic acid) conduits for peripheral nerve regeneration: An in vitro and in vivo study. ***Journal of Biomedical Materials Research (part B)***, ***2007*** ; 83(1):206–215. **(SCI).**
5. **C.J. Chang**, S.h. Hsu*. The effect of high outflow permeability in asymmetric poly(DL-lactic acid-co-glycolic acid) conduits for peripheral nerve regeneration. ***Biomaterials, 2006*** ; 27(7): 1035–1042. **(SCI).**
6. **C.J. Chang**, P.L. Liao, S.h. Hsu*, H. Chang, C.S. Chang. Low-intensity ultrasound accelerated nerve regeneration using cells-seeded poly(DL-lactic acid-co-glycolic acid) conduits : An in-vivo and in-vitro study. ***Journal of Biomedical Materials Research (part B), 2005*** ; 75 (1): 99–107.. **(SCI).**
7. **C.J. Chang**, S.H. Hsu*, The effects of low-intensity ultrasound on peripheral nerve regeneration in poly(DL-lactic acid-co-glycolic acid) conduits seeded with Schwann cells, ***Ultrasound in Medicine & Biology, 2004***;30: 1079-1084 **(SCI)**.
8. S.H. Hsu, **C.J. Chang**, C.M. Tang, F.T. Lin. In vitro and in vivo effects of Ginkgo biloba extract EGb 761 on seeded Schwann cells within poly(DL-lactic acid-co-glycolic acid) conduits for peripheral nerve regeneration, ***Journal of Biomaterials Applications, 2004*;**19: 163 - 182. **(SCI)**.
9. C.H. Yao, B.S. Liu, **C.J. Chang**, S.H. Hsu, Preparation of networks of gelatin and genipin as degradable biomaterials. ***Materials Chemistry and Physics***, ***2004*** ；83：204-208.(4.5). **(SCI)**
10. H.Y. Chen, T.B. Huang, **C.J. Chang***, B.S. Liu*. Enhancement of in vitro bioactivity by surface treatments of commercially ultra-thin titanium foils for guided periodontal tissue regeneration. ***Journal of Medical and Biological Engineering, 2010***;30(1)**(EI) (Corresponding author)**
11. B.S Liu*, T.B Huang, C.H. Yao, S.S. Fang, **C.J. Chang***. Novel wound dressing composed of non-woven fabric coated with genipin-crosslinked chitosan and *bletilla striata* herbal extract. ***Journal of Medical and Biological Engineering, 2009*** **(EI) (Corresponding author)**
12. C.M. Lu, **C.J. Chang***, Y.C. Li, H.C. Lin, S.C. Hsieh, B.S. Liu. Effects of

asymmetric polycaprolactone films on co-culture nerve conduit model. ***Journal of Medical and Biological Engineering, 2009*** **(EI) (Corresponding author)**

13. B.S. Liu*, T.B. Huang, **C.J. Chang** . An-Yu Tai, Evaluation of Ultra-thin Acid-etched Titanium Foils as Guided Tissue Regeneration Membrane. ***Journal of Medical and Biological Engineering, 2008***; 28(4):181-190. **(EI).**
14. H.C. Lin, C.M. Lu, W.T. Huang, S.M. Li, S.K. Hsu, **C.J. Chang***. The Effects of Ultrasound Stimulation on MG63 Cells Seeding on Titanium. ***J. Central Taiwan University of Sci. and Tech. 2008*** ;19(3):75-88. **(corresponding author)**.

B．會議發表

1. C.H. Hsu, C.Y. Lin, C.H. Hung, S.F. Tian, C.C. Chang, W.H. Shen, **C.J. Chang***. The evaluation of alveolar bone mineral density by modified Fel'swedge with periodontal film. 5th Conference of International Medical Imaging and Radiological Science 2010. R.O.C. May, 2010.
2. C.H. Hsu ,C.Y. Lin ,C.H. Hung ,S.F. Tian ,C.C. Chang ,W.H. Shen , **C.J. Chang***. A novel assistive device on measuring the alveolar bone thickness by diagnostic x-ray. 5th Conference of International Medical Imaging and Radiological Science 2010. R.O.C. May, 2010.
3. C.Y. Lin, C.M. Lu, C.C. Chang, S.F. Tian, **C.J. Chang***, The effect of oblique ultrasound on L929 cell migration. 5th Conference of International Medical Imaging and Radiological Science 2010. R.O.C. May, 2010.
4. W.T. Huang, J.Y. Kung, C.M. Lu, L.L. Hsieh, S.K. Hsu, C.H. H, **C.J. Chang***, B.S. Liu*. Effects of Asymmetric Structure on Controlled-release Poly(DL-lactic acid-co-glycolic acid) Conduits in Peripheral Nerve Regeneration. TACT 2009 International Thin Films Conference, Taipei, R.O.C., Dec, 2009.
5. S.C. Hsieh, **C.J. Chang***, L.L. Hsieh, C.Y. Lin, S.h. Hsu*. Evaluation of Covalent Immobilized Nerve Growth Factor on Poly(DL-lactic acid-co-glycolic acid) Conduit for Peripheral Nerve Regeneration. TACT 2009 International Thin Films Conference, Taipei, R.O.C., Dec, 2009.
6. C.Y. Chang, S.K. Hsu, **C.J. Chang**, C.L. Chang, H.H. Lo*. Evaluation of TiO2

Thin film for Control of Nosocomial Pathogens. TACT 2009 International Thin Films Conference, Taipei, R.O.C., Dec, 2009. L.C. Liao, S.M. Li, J.Y. Kung, H.C. Lin, **C.J. Chang***. The Evaluation of low-intensity ultrasound on dental implant osseointegration. The International Dental Materials Congress 2007, Bangkok, Thailand, Nov, 2007.

7. 李詩苗,林錫禎,呂春美,洪英源,董喬惠,**張振榮***. Effects of cell migration by horizontal flow from ultrasound. 中華民國醫事放射學會第四十次年會學術研討會暨第五回中日韓共同學術大會, 2007.
8. 龔瑞英,呂春美,**張振榮***. Effects of ultrasound stimulation and dynamic bioreactor on the seeding of Schwann cells in nerve guidance channels. 第十屆工程科技與中西醫學應用研討會, 2007.
9. 廖龍泉,呂春美,**張振榮***. Study of optimal factors with ultrasound stimulate Schwann cell using Taguchi method. 第十屆工程科技與中西醫學應用研討會, 2007.
10. 林錫禎,陳信雄,**張振榮***. Study on the control released asymmetric nerve conduits with nerve growth factor. 第十屆工程科技與中西醫學應用研討會, 2007.
11. 李詩苗,**張振榮**,黃文濤*. Study on the control released matrix in peripheral nerve repair. 第十屆工程科技與中西醫學應用研討會, 2007.
12. 李詩苗,許學全,**張振榮**,林錫禎*. The Effects of Ultrasound Stimulation on Dental Osseointegration. 第十屆工程科技與中西醫學應用研討會, 2007.
13. 黃文成,**張振榮**,呂春美*. Fabrication of asymmetric PCL film and the biocompatibility evaluation in-vitro. 第十屆工程科技與中西醫學應用研討會, 2007. (NSC 95-2221-E-166-003-MY2)
14. 龔瑞英,**張振榮**,徐善慧,謝淑枝(通訊作者). Study on the control released nerve guide conduits. 第十屆工程科技與中西醫學應用研討會, 2007
15. 龔瑞英、呂春美、林錫禎、王榮立、林易玨、**張振榮***. Application of ultrasound stimulation and dynamic bioreactor on tissue-engineering nerve guidance channels for peripheral nerve regeneration. 中華民國醫事放射年會研討會, 2007.
16. 賴宜慧、呂春美、林錫禎、洪英源、廖韻嬋、**張振榮***. Effects of ultrasound stimulation from various angles on the cell migration. 中華民國醫事放射年會研討會, 2007.

17. J.Y. Kung, Y.C. Liao, **C.J. Chang**, S.h. Hsu*. Low-intensity ultrasound accelerated nerve regeneration using cells-seeded poly(DL-lactic acid-co-glycolic acid) conduits. 中華民國放射醫學會年會, 2006

C. 發明專利

1. “長效型放射治療皮膚標記染劑”發明專利(發明I326600號 2010/07/24-2027/08/04)
2. “植牙用之植體結構”新型專利(新型M364506號 2009/09/11-2018/11/04)
3. “動態共培養分析系統”新型專利(新型M333416號 2008/06/01-2017/11/06)
4. “通用型培養系統”新型專利(新型M314517號 2007/07/01-2017/01/11)
5. “骨質密度檢測之參考輔具及檢測方法”新型專利(新型M384639號 2010/07/21-2020/02/24)
6. “齒槽骨攝影輔助夾具”新型專利(新型M389525號 2010/10/01-2020/01/07)
7. “管狀生體組織修復導管之動態培養系統”新型專利(申請案號099218066 2010/12/17)(已通過,發證中)

近年來主持之計畫有:

1. 2010 年8 月~2013 年7 月『新穎三維凝膠劑量計之發展與應用－新穎三維凝膠劑量計之發展與應用』(國科會)
2. 2011 年1 月~ 2011 年12 月『探討日本腦炎病毒感染後星狀神經膠細胞對內皮細胞活性的影響』(中榮產學)
3. 2010 年2 月~ 2010 年12 月『新型具藥物制放之聚己內酯不對稱再生膜於軟骨修復之研製及評估』(國科會)
4. 2009 年8 月~2010 年7 月『斜向超音波微流場對內皮細胞與平滑肌細胞共培養之影響研究(II)--細胞共培養系統分析、斜向超音波刺激微血管與不對稱微血管床研製』(國科會)
5. 2009 年1 月~ 2009 年12 月『探討日本腦炎病毒感染後周細胞對內皮細胞活性的影響』(中榮產學)
6. 2008 年8 月~2009 年7 月『斜向超音波微流場對內皮細胞與平滑肌細胞共培養之影響研究(I)』(國科會)
7. 2008 年8 月~2009 年7 月『藥物制放神經修復導管之製備與研究』(國科會)

8. 2008 年1 月~2008 年12 月『探討脂肪酸對神經幹細胞的影響』(中榮產學)
9. 2007 年11 月~2008 年10 月『新型具藥物制放之不對稱明膠／聚乳酸聚甘醇酸牙周再生膜之研製與評估』(國科會)
10. 2006 年8 月~2007 年7 月『不對稱型組織工程神經導管之製備與研究』(國科會)
11. 2006 年5 月~ 2006 年12 月『以油體為包覆薑黃素之材料並評估該藥物之釋放與其生物活性之變化』(教育部產學合作)
12. 2006 年8 月~2007 年7 月『動態培養系統對牙髓幹細胞應用』(一般產學)
13. 2006 年8 月~2007 年7 月『藥物釋放週邊神經導管之研發』(一般產學)
14. 2005 年11 月~2006 年10 月『超音波刺激對植牙骨整合之研究』。(國科會)
15. 2005 年8 月~2006 年7 月『超音波刺激與動態生物反應器對組織工程神經修復導管之應用』(國科會)
16. 2005 年8 月~ 2006 年7 月『The evaluation of ultrasound stimulation and dynamic bioreactor on seeded Schwann cells within nerve conduits』
17. 2005 年1 月~ 2005 年12 月『Effects of ultrasound stimulation on a long-gap sciatic nerve dissection using a cells-seeded nerve guidance channels』(校內產學)
18. 2005 年1 月~ 2005 年12 月『Evaluation of a novel nanocomposite nerve conduit on Schwann cells culturing』(校內一般)
19. 2004 年1 月~ 2004 年12 月『Fabrication and application of nerve conduits with electrically charged polymers on nerve regeneration in animal model』(校內產學)