



止痛晶片電一下 三到五天不會痛

手機感應刷一下，止痛晶片就可讓骨刺或神經痛患者遠離疼痛！以台灣大學為首的研究團隊合作研發出全球最小的「植入式止痛微晶片」，未來只要在體內植入一片十元大小的止痛晶片，就再也不用三個月跑一次醫院開刀「電」一下。

全球許多病患深受下背痛、骨刺、椎間盤突出、三叉神經發炎等病痛之苦，平均每三個月到半年就得赴醫院開刀、照X光，並進行電刺激熱凝療法。國內健保給付六千元，病患還得自費五千元買治療用針，讓醫師急於尋找替代療法。

台大、北科大、中興醫院與新光醫院跨校且跨領域合作，開發出全球體積最小的「止痛晶片」。

台北科大電子工程學系助理教授邱弘緯說明，只要止痛晶片植入脊椎神經附近，當病患疼痛時，只需將可供應無線電源的傳電器在體外感應，就可啟動體內止痛晶片，「就好像暫時麻痺該神經，讓

人失去痛覺。」傳電器未來可結合手機、iPod等隨身電子用品，靠近身體就可啟動晶片。

林啟萬補充，國外雖已有內建電池的植入式止痛晶片，電力可用上五到十年，但體積將近六平方公分，且是持續性刺激神經，每次電壓約四十伏特，整體價格高達四十到五十萬元。台大的超小晶片將每次啟動的電壓降到三、七伏特，病人可自行控制，整體價格則可望降到十萬元以下。

台大電子所教授呂學士也表示，止痛晶片已在小鼠實驗成功，每隻小鼠經晶片「電」一下後，療效可維持三到五天。他透露，已有醫療生技廠商表達合作意願，預計一到兩年內進入臨床的人體實驗，「估計五年內可實際應用」。

這項研發成果將在明年二月國際固態電路會議 (ISSCC) 中發表。

(自由時報記者陳怡靜)

New device promises to eradicate pain in one swipe

Thanks to a microchip implant developed by a National Taiwan University-led (NTU) research team, sufferers of bone spurs or neuralgia will be able to instantly **relieve** their pain by simply swiping a mobile phone over a chip implant. The team have developed the world's smallest "analgesic microchip implant," a device the size of a NT\$10 coin that means **chronic** pain sufferers can dispense with visiting a hospital every three months for electronic pain relief treatment.

For many sufferers of back pain, bone spurs, spinal disc herniation or trigeminal neuritis, visits to a hospital for surgery, X-rays and electro-thermal therapy are a chore they must undertake every three to six months. Since the National Health Insurance Program only covers up to NT\$6,000 of the cost of such treatment, patients have to spend NT\$5,000 on treatment needles each time. Doctors are therefore anxious to find an alternative method of pain relief for patients.

The cross-disciplinary research project is a collaborative effort by NTU, National Taipei University of Technology (NTUT), Chungshing Hospital and Shin Kong Wu Ho-su Memorial Hospital.

Chiu Hung-wei, an assistant professor in the Department of Electronic Engineering at NTUT, says that a microchip would be inserted near the spinal nerves. When patients feel pain, they can activate the analgesic chip by using a wireless transmitter. "It is as if the nerves were temporarily **paralyzed**, making people feel like the pain is

gone," he says. The transmitter will be combined with portable electronic devices such as mobile phones and iPods in the future. By that time, patients will only need to move the devices close to their bodies, and the chip will be activated.

NTU Institute of Biomedical Engineering Professor Lin Chi-wan says that analgesic microchips with built-in batteries are already available in other countries. Although the power lasts between five and ten years, each implant is nearly six square centimeters in size and stimulates nerves with a continuous voltage of about 40 volts each time. An entire device costs between NT\$400,000 and NT\$500,000. On the other hand, the voltage of the microchip invented by the NTU-led research team is reduced to 3.7 volts and patients can control the device by themselves. Its price is expected to be brought down to below NT\$100,000.

Lu Shey-shi, a professor in the Graduate Institute of Electronics Engineering at NTU, notes that the new analgesic microchip has yielded successful results on guinea pigs with the effects lasting three to five days. He added that several medical biotech companies have expressed an interest in participating in the project. Human clinical trials are expected to follow in two to three years time and the microchip will be put in practical use within five years.

The research results will be published at the annual International Solid-State Circuits Conference in February next year.

(LIBERTY TIMES, TRANSLATED BY THEODORE YANG)

Left: In this undated photo, Lu Shey-shi, a professor in the Graduate Institute of Electronics Engineering at National Taiwan University (NTU), holds the world's smallest analgesic microchip implant, developed by an NTU-led research team in Taipei.

PHOTOS: CHEN YI-CHING, LIBERTY TIMES

左圖：在這張攝於台北、未註明日期的照片中，台大電子所教授呂學士手持全球最小的植入式止痛晶片。該晶片是由台大為首的研究團隊所研發。

照片：自由時報記者陳怡靜攝

1. relieve /rɪˈli:v/ v.
減緩 (jian2 huan3)

例：This medicine won't cure your cold, but it will relieve most of the symptoms.
(這種藥無法根治你的感冒，但能減緩大部分的症狀。)

2. chronic /ˈkrɒnɪk/ adj.
慢性的 (man4 xing4 de5)

例：Edith has been suffering from chronic bronchitis for several years.
(愛迪斯幾年來一直飽受慢性支氣管炎之苦。)

3. paralyze /ˈpærəˌlaɪz/ v.
使麻痺 (shi3 ma2 bi4)

例：One of the accident victims was temporarily paralyzed following the crash.
(這場車禍意外中一名傷患暫時癱瘓。)