I am a project manager at NCKU SPARK program. My office duties are (1) helped academicians overcome the obstacles involved in transitioning research innovations from the laboratory to the clinic, and (2) built an ecosystem to execute above mission within National Cheng Kung University. In addition, I also management medical device development teams in the SPARK program, including (1) Designed and developed a new type nasogastric tube, (2) Designed and developed an upper GI monitor system, and (3) Developed a photodynamic therapy system.

In this program, I plan and execute the SPRAK program, built a medical device guidance system for SPARK teams, and won a first prize, as team leader, in the “From IP To IPO (FITI)” innovation and startup competition.

Two major purposes of the SPARK program are to promote responsible and sustainable medical innovation, to facilitate the translation of research and innovation into collective clinical benefit, and to inspire innovations for team members. From the beginning of the NCKU SPARK program in 2013, the NCKU SPARK program office (PO) set a long term goal on building up an ecosystem for supporting medical startup within NCKU. The PO defines the first three years as an initial phase. In this phase, NCKU SPARK has incubated five startup companies with 21 million NTD total capital, singed one technology transfer, and helps to win four First Prize and two Second Prize in FITI innovation & startup project. That was a successful experience for the NCKU SPARK PO, and also proved that the operation mechanism was correct. The mid-term goal is to move to the acceleration phase. In order to lay the foundation of sustainable development in this phase, the PO is going to bring in resources from the industry and develop a cooperative model by providing the coaching ability for medical technology development with matching fund from industry. To achieve the goal, five major tasks include 1) to access resources from industries, 2) to create a management and guidance system, 3) to strengthen the mentor group, 4) to run startup training camps for the SPARK members, and 5) to build up an application spotlight group for increasing the core capability and further driving the industrial development.
Two research outcomes of the participate teams are:

#1  
Upper-Gastrointestinal-Bleeding monitoring system  
After surgery to stop upper gastrointestinal(GI) bleeding, patients need to stay in hospital for observation because re-bleeding may occur. Percentage of re-bleeding in patients of first occurrence of upper GI bleeding is about 40%. So far, there is no device which can monitor upper GI condition continuously for several days. Thus, in practice, patient’s blood pressure and waste are checked regularly by nurses and hope re-bleeding, if happens, can be found on time. Depending on the amount of re-bleeding, it is possible to find re-bleeding two days later. Thus, treatment could be too late to be done. In order to effectively detect re-bleeding, we develop an uppergastrointestinal-bleeding monitoring system. This system will not affect patients eating and other activities and can be removed easily.

#2  
Development of a novel, non-toxic, and highly efficient infrared photodynamic disinfection kit applied in Dentistry  
Prof. Ping-Ching Wu, Department of Biomedical Engineering at NCKU, and Dr. Pei-Wen Wang, Institute of Oral Medicine at NCKU Hospital used highly efficient infrared photodynamic technology to develop low-power portable diode laser photodynamic oral medical device and combined with the specific photosensitizer dye for oral pathogens. The goals of the startup team are to develop a low toxicity and high efficiency therapeutic strategy with infrared spectrophotometer photodynamic kit. This kit includes a dye can specific binding pathogens of periodontosis and produce photodynamic when stimulated by specific wavelength of low-power far-infrared light diode laser. It would have multiple applications in dental health, such as root canal treatment, periodontal disease and inflammation explants debridement, more immediate and effective without harming normal tissue and expensive equipment than traditional therapeutic procedure. The competition advantages of this system are able to shorten the course as well as time of treatment and decrease the uncomfortable feelings with low toxicity and high efficiency photosensitizer.
二、研究或教學或科技研發與管理成效評估（由計畫主持人或單位主管填寫）

Please evaluate the performance of research, teaching or science and technology R&D and management Work: (To be completed by Project Investigator or Head of Department/Center)

(1) 是否達到延攬預期目標?
Has the expected goal of recruitment been achieved?

yes

(2) 研究或教學或科技研發與管理的方法、專業知識及進度如何?
What are the methods, professional knowledge, and progress of the research, teaching, or R&D and management work?

Everything in progress, and under control.

(3) 受延攬人之研究或教學或科技研發與管理成果對該計畫（或貴單位）助益如何?
How have the research, teaching, or R&D and management results of the employed person given benefit to the project (or your unit)?

Dr. Lin plan and executed this program, guides the researchers to translate their lab research outcome into market commercial product. The first year we have achieved 1 startup company, 2 startup companies in the second year, and 3 company preparatory offices in the third year.

(4) 受延攬人於補助期間對貴單位或國內相關學術科技領域助益如何?
How has the employed person, during his or her term of employment, benefited your unit or the relevant domestic academic field?

Everything is about building an eco-system to support bio-medical startup in NCKU and southern Taiwan. In order to make it happen Dr. Lin’s contribution are, (1) increase the coaching quality by recruiting more industry based mentors, (2) integrate resources from each department form NCKU, and (3) create a culture for academes to challenge valuable study.

(5) 具體工作績效或研究或教學或科技研發與管理成果:
Please describe the specific work performance, or the results of research, teaching, or R&D and management work:

1. Plan and execute the SPRAK program
2. Built a medical device guidance system for SPARK teams
3. Won a first prize, as team leader, in the “From IP To IPO (FITI)” innovation and startup competition.

(6) 是否續聘受聘人？Will you continue hiring the employed person? □續聘 Yes  ☑不續聘 No

※此報告表篇幅以三～四頁為原則。This report form should be limited to 3-4 pages in principle.
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