

Howard Chou

报告人简介:

Howard Chou 博士获得麻省理工学院生物学学士学位、计算机科学学士学位以及计算机科学硕士学位，随后获得加州大学伯克利分校生物工程博士学位和哈斯商学院的技术硕士。Howard Chou 博士于 2012 年加入凯赛，现任研发副总裁。利用合成生物学、生物信息学和蛋白质工程方面的专长，Howard Chou 博士为凯赛的产品系列开发新的菌株，并在凯赛设立了高通量筛选平台，帮助管理知识产权，并将新技术从实验室规模转移到商业化规模。



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Profile of the Author:

Dr. Howard Chou received his B.S. in Biology, B.S. in Computer Science, and M. Eng. in Computer Science from the Massachusetts Institute of Technology. He received his Ph.D. in Bioengineering from the University of California, Berkeley and Masters of Technology from the Haas School of Business.

Dr. Howard Chou joined Cathay Industrial Biotech Ltd. (“Cathay”) In 2012, and now serves as the Vice President of Research and Development. He uses his expertise in synthetic biology, bioinformatics, and protein engineering to develop new strains for Cathay’s product pipeline. He setup the high-throughput screening platform at Cathay, and helps to manage intellectual property and the transfer of new technologies from laboratory scale to commercial scale.

生物基新材料的研究和产业化

摘要: 美国能源部于 2004 年推荐了 12 个生物基系列化合物, 中国国务院和吉林省政府也曾发布过禁塑令。在过去 20 年内, 众多大型国际化工和粮食加工企业投入过不少生物新材料项目, 一批国际基金也投资到由著名科学家/行业专家创立的生物材料的企业中, 其中一部分于 2006-2013 年期间在美国纳斯达克成功上市。但到目前为止, 生物基新材料项目鲜有盈利报道, 大部分上市企业已经破产, 被业界期盼的几个产业化项目也因资金链断裂被迫关闭。这些生物新材料产业发展过程中的挫折当为同行者借鉴, 避免重蹈覆辙。

以凯赛生物基聚酰胺新材料项目为例, 分享合成生物学(构造高效生物代谢途径)、化学工程(发酵/酶转化体系的提取纯化)、细胞工程(生物反应过程控制)、生物制造产业资源组合以及生物材料应用开发等多学科组合对于项目选题和实施的价值体会。

Innovation and Commercialization of Bio-based Materials

Abstract: US DoE proposed a list of “Top Value Added Chemicals from Biomass” in August 2004. The China State Council and Jilin Provincial Government also issued Decrees for restriction on chemical plastics in order to promote the development of bio-based polymers. Over the past 20 years, several major international chemical and agriculture companies have invested substantial resources in bio-based projects. As a result, a number of joint ventures and companies were founded that involved a combination of reputable scientists and international investors, and several of those companies went IPO in the US during 2006-2013. Unfortunately, a large number of those public companies and joint ventures have gone bankrupt or closed due to a lack of financing. These companies serve as lessons to future industry players, and demonstrate the difficulty in building a profitable bio-based materials business.

The presentation intends to share Cathay’s experience in project evaluation and

execution of bio-based related products, and gives an example of a workflow from research to commercialization of bio-based polyamides. Cathay leverages a combination of multiple disciplines in order to develop a bio-based industrial project with a competitive edge. These disciplines include synthetic biology to build efficient pathways, chemical engineering to develop processes for the extraction and purification of bio-reaction systems, cellular engineering to control the bio-conversion process, resource organization of bio-based manufacturing, and application development of innovated bio-based materials.