**《精准医学与分子诊断导论》课程教学大纲**

Course Outline for (Introduction to Precision Medicine and Molecular Diagnostics)

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| 课程基本信息（Course Information） | | | | | | | |
| 课程代码  （Course Code） | BM027 | \*学时  （Credit Hours） | 32 | \*学分  （Credits） | | 2 | |
| \*课程名称  （Course Name） | （中文）精准医学与分子诊断导论 | | | | | | |
| （英文）Introduction to Precision Medicine and Molecular Diagnostics | | | | | | |
| 课程性质  (Course Type) | 公共选修课  Common optional course | | | | | | |
| 授课对象  （Audience） | 全体本科生  (For all undergraduates) | | | | | | |
| 授课语言  (Language of Instruction) | 中文  Chinese | | | | | | |
| \*开课院系  （School） | 生命科学技术学院  School of Life Sciences and Biotechnology | | | | | | |
| 先修课程  （Prerequisite） | 无  None | | | | | | |
| 授课教师  （Instructor） | 肖华  Hua Xiao | | 课程网址  (Course Webpage) | | N/A | |
| \*课程简介（Description） | 此课程是面向全体本科生的公共选修课，也可作为生物与医药方向本科生的通识课程。课程要求掌握精准医学和分子诊断的基本概念，精准医学的背景、趋势和应用，分子诊断的常见技术与原理，明确分子诊断在精准医学的作用。围绕基本概念和基本原理展开教学，让学生了解精准医学和分子诊断的内涵与应用。教学内容主要包括：精准医学概述、精准医学背景与趋势、精准医学与肿瘤、精准医学与慢性病、精准医学与遗传病、精准医学与药物基因组学、精准医学伦理，传统诊断技术，分子诊断技术，包括常见分析仪器、癌症基因组测序、质谱分析法、癌症蛋白质组学、分子诊断与分子筛查、分子诊断的质控与标准化等。本课程以课堂教学为主，讲解基本概念、基本原理和具体技术，并结合转化医学研究成果进行分析，让同学们提高对精准医学和分子诊断的兴趣，更好地理解精准医学原理，培养学生建立以技术驱动医学的理论体系、思维方式与研究方法。课堂教学中还引入讨论和文献调研，活跃课堂气氛，激发同学们的兴趣，使他们能更好地融入课程学习。 | | | | | | |
| \*课程简介（Description） | This course is dedicated to all undergraduates, which could also be the common optional course for the major in biology and medicine. The students are required to master the basic concepts, background, trends, and application of precision medicine and molecular diagnostics. The students are required to master the conventional technologies and principles of molecular diagnostics as well as the role of molecular diagnostics in precision medicine. The teaching will focus on the basic concepts and principles and the students are expected to understand the meaning and applications of precision medicine and molecular diagnostics. Course contents include: introduction to precision medicine, it’s background and trends; precision medicine in tumor; precision medicine in chronic diseases, precision medicine in genetic diseases; precision medicine in pharmacogenomics; ethic of precision medicine; traditional diagnostic technologies; technologies for molecular diagnostics, including analytical instruments; cancer gene sequencing, mass spectrometry analysis; cancer proteomics; molecular diagnostics and screening; quality control and standardization of molecular diagnostics and etc. This course will be taught mainly through classroom teaching, class discussion, and homework. This course will introduce basic concepts, principles, and specific technologies that could be linked to the research of translational medicine. This course will enable students to gain a better understanding of the principles of precision medicine, and build the theory, thinking, and research methods for technology driven medicine. Discussion and literature survey will be introduced in the classroom, to promote their interests in precision medicine and molecular diagnostics, so that students could become more active and involved into classroom teaching. | | | | | | |
| 课程教学大纲（Course Syllabus） | | | | | | | |
| \*学习目标(Learning Outcomes) | 1．掌握精准医学和分子诊断的基本概念、背景和应用 (Master the basic concepts, background, and applications of precision medicine and molecular diagnostics)  2．熟悉分子诊断的常见技术与原理 (Master the conventional technologies and principles of molecular diagnostics)  3．了解分子诊断在精准医学的作用 (Understand the role of molecular diagnostics in precision medicine)  4．建立以技术驱动医学的理论体系、思维方式与研究方法 (Build the theory, thinking and research methods for technology driven medicine. | | | | | | |
| \*教学内容、进度安排及要求(Class Schedule & Requirements) | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 教学内容 | 学时 | 教学方式 | 作业及要求 | 基本要求 | 考查方式 | | 精准医学概述、背景与趋势 | 4 | 课堂教学中融入小组讨论 Classroom teaching with panel discussion | 课堂教学后有课外作业，要求针对具体分子诊断技术查找文献、收集数据撰写小论文。Homework assignment was required. Students should read references on molecular diagnostics and write short assay. | 围绕基本概念和基本原理展开教学，让学生了解精准医学和分子诊断的内涵与应用。The teaching will focus on specific concepts and basic principles. The students are required to understand the meaning and applications of precision medicine and molecular diagnostics. | 结合课堂提问、讨论和作业，深化对课程内容的理解。Through questions, discussions, and homework, enforce the students’ understanding of the course. | | 精准医学与肿瘤 | 4 | | 精准医学与慢性病 | 2 | | 精准医学与遗传病 | 2 | | 精准医学与药物基因组学 | 2 | | 传统诊断技术 | 2 | | 分子诊断技术与仪器 | 2 | | 癌症基因组测序 | 2 | | 质谱分析法 | 2 | | 癌症蛋白质组学 | 4 | | 分子诊断与分子筛查 | 2 | | 分子诊断的质控与标准化 | 2 | | 精准医学与分子诊断 | 2 | | | | | | | |
| \*考核方式(Grading) | （成绩构成）  平时作业和出勤：20%。主要考核知识点的掌握程度和考勤情况。(Assignments and attendance: 20%. Basically assesses the understanding of knowledge and attendance.)  课堂讨论：30%。主要考核课堂分析解决问题等方面的能力。(Classroom discussion: 30%. Mainly assesses the ability in classroom to analyze and solve problems)  考试：50%。主要考核对精准医学与分子诊断的基本原理和技术的掌握程度。(Exam: 50%。Mainly assesses the understanding of the principles and technologies of precision medicine and molecular diagnostics.) | | | | | | |
| \*教材或参考资料(Textbooks & Other Materials) | （必含信息：教材名称，作者，出版社，出版年份，版次，书号）  参考资料：   1. 《精准医学导论》，主编：吴松，中山大学出版社，2015， ISBN 978-7-306-05512-5； 2. 《分子诊断与肿瘤个体化治疗原则》，主编：Tan, Dongfeng , Lynch, H. T.，主译：张绪超，刘毅，科学出版社，2016，ISBN 978-7-03-049862-5。 | | | | | | |
| 其它（More） |  | | | | | | |
| 备注（Notes） |  | | | | | | |

备注说明：

1．带\*内容为必填项。

2．课程简介字数为300-500字；课程大纲以表述清楚教学安排为宜，字数不限。