SCIENCE & RESEARCH BUILDING

科研建筑



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科研建筑 许雅杰 杨华 译

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PREFACE | PRINCE



Traditionally research laboratories have been highly internalized and almost secretive places. They were funded by Governments or large corporations and singularly focused on the research at hand. They were not designed with the well-being of the user in mind or to celebrate the activities within. That has now changed. The modern research institution relies on the generous donations of benefactors to drive the expensive research and there is no better way to entice their benevolence than to demystify and celebrate the inner workings of the lab. Likewise institutions need to provide an attractive working environment to draw in the best researchers. So the modern laboratory is on display. Architecturally it must look the part – both as an interpretative exhibition space, and as a desirable work space. But it must still function as a place for research.

When architects work within a particular building typology they must understand what is negotiable and what is not. Projects of great complexity, such as modern research laboratories and hospitals, can be overwhelming to an architect. There are so many standards to comply with, services and piped gases to coordinate, expensive equipment to accommodate, and very specific workflows to understand. It is far easier, and safer, to follow the accepted wisdom and repeat the typology that appears to work and is already accepted.

However institutions want memorable facilities that will attract funding and need architects to redefine and challenge the accepted architectural canon. So if innovation is to occur within these programmatically complex buildings, it requires a thorough understanding of exactly how and what is to occur within the building. A collaborative first principles analysis by architect and stakeholder is necessary to unpack the mysteries of the type. This will help to identify and test the non-negotiable aspects of the project brief, so that the team can move onto the areas of potential innovation and interest. Conversely, design innovation completed without this kind of interrogation of the type is unlikely to achieve little more than architectural novelty.

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Andrew Nimmo, Director lahznimmo architects Adjunct Professor at the Faculty of Architecture, Planning and Design, University of Sydney.

传统意义上的科研实验室是高度内在化的、几近神秘的地方。他们受政府或大型企业资助,非常专注于手上研究的项目,用户的福祉或庆祝活动不在他们的考虑之中。但是现在这些已经发生了变化。现代研究机构依靠捐助者的慷慨捐赠来驱动昂贵的研究,没有比使实验室非神秘化和庆祝实验室内部运作更好的办法来吸引捐助者的仁慈了。同样,机构需要提供一个有吸引力的工作环境,以吸引最好的研究人员。因此,现代化的实验室是以真面目示人的。在结构上,它必须兼具解说性的展览空间以及理想的工作空间的功能。同时,它还必须要继续发挥科研场所的功能。

当建筑师在一个特定的建筑类型内工作时,他们必须明白什么是可协商的,什么是不可协商的。高复杂性的项目,如现代化的研究实验室和医院,对于建筑师而言是高难度的,因为要遵守太多的标准要求,比如,要协调服务和气体管道,要留有容纳昂贵设备的空间,要充分理解非常具体的工作流程。相对而言,遵循公认的准则和重复那些有效且已被公认的建筑类型的工作则更加容易,更加安全。

然而,研究机构需要重量级的设施来吸引资金,就需要建筑师重新定义和挑战公认的建筑标准。因此,如果想要在这些编程复杂的建筑物内进行创新,就需要透彻理解究竟要如何在建筑物内进行创新和什么需要创新。解开这种建筑类型的神秘性,是建筑师和利益相关者对于协作分析的首要原则。这将有助于确定和测试不可协商的项目的本质,以便于团队继续向前研究潜在的创新领域和利益区间。相反,如果不对该类型建筑进行上述研究,那么建成的建筑,除了建筑外形上的创新,很难有更深的新意。

因此,项目的本质是一个科研实验室取得成功的关键。一些空间,如办公空间,它们的建筑要求相对宽松一些,但是其他空间,如实验室的相关空间,可能放有昂贵而精细校准的设备、冷冻机或孵化室,故这类空间的设计要求非常细化、具体。随着时间的推移,要求会不断发生变化。因此,必须设计出灵活且不断发展的研究机构,这样才能适应不断变化的研究方案。要在已经固定的垂直立管和管道系统的基础上创建一个高质量的环境,同时还要为空间留有未来发展的灵活性和改造的可能性,这是实验室设计面临的一个主要挑战。

安德鲁·尼姆,Izhznimmo 建筑事务所设计总监 悉尼大学建筑、设计与规划学院副教授



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今天我们需要的是立竿见影的效果。科学家们争分夺秒地专注于专利竞赛。想要迅速进步的最有名的方式就是专业人士间互相交流, 建立人际交往和多学科之间的互动。在当今这个时代做到忽视距离保持联系和在某个领域中与时俱进很容易,但是事实证明,在专为个人 互动设计的共享区域中,思想和成果的产出会成倍提高。

科研建筑的新工作空间必须允许研究人员进行实验,独立工作,并以非正式的方式与其他专业人士联系。来自世界各地的科学家将他们的家和他们的生活移到了远离其熟悉的环境的地方和国家。因此,工作场所的气氛和条件必须有吸引力,几乎要像家一样,因为很大一部分的工作区是注定要被设计成为休息、沉思、社交甚至是休闲的场所的。

因此,实验室、工作站和公共区域都成为了科**研建筑结构的基本组成部分。科研建筑的空间设计必须灵活,以便利于空间改造,适应** 新的空间利用方式以及人们不断变换的生活习惯。

> Javier Aja Cantalejo ACXT-IDOM 事务所,高级合伙人 / 建筑师

AGAINST THE CLOCK 分秒必争

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LINNAEUSBORG, CENTER FOR LIFE SCIENCES



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PREFACE | PRINCE



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ARCHITECTURAL RESEARCH CENTER UNIVERSITY OF NICOSIA



中东技术大学模拟与仿真研究中心

MIDDLE EAST TECHNICAL UNIVERSITY MODSIMMER MODELLING AND SIMULATION RESEARCH CENTER



艾伦研发中心

ARON R & D CENTER



雀巢公司研究实验室

NESTLE'S RESEARCH LABORATORIES



洛伊癌症研究中心

LOWY CANCER RESEARCH CENTER



N • 列文虔克实验室

VAN I FELIWENHOEK I ABORATORY



土耳其移动通信技术研究与发展中心

TURKCELL TECHNOLOGY RESEARCH AND DEVELOPMENT CENTER



CIC Energigune 实验大楼

CIC ENERGIGUNE



生物医学研究中心

BIOMEDICAL RESEARCH CENTER



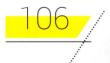
阿姆斯特丹牙科学术中心

ACADEMIC CENTER FOR DENTISTRY



毕缇生物多样性研究中心和水生生态系统研究院

BEATY BIODIVERSITY CENTER
AND AQUATIC ECOSYSTEMS
RESEARCH LABORATORY



阿姆斯特丹大学理学院

AMSTERDAM FACULTY OF SCIENCE



Bèta 技术和企业加速器

BÈTA TECHNOLOGY AND BUSINESS ACCELERATOR

加拿大自然资源部材料检测实验室

TECHNOLOGY LABORATORY

Emily Couric 临床癌症中心

EMILY COURIC CLINICAL CANCER CENTER

李嘉诚知识研究院

LI KA SHING KNOWLEDGE

爱茉莉太平洋研究与设计中心

AMORE PACIFIC RESEARCH &

麦吉尔大学生命科学综合楼

桑福德再生医学研究中心

SANFORD CONSORTIUM FOR REGENERATIVE MEDICINE

新 Immergas 高级培训中心 Domus Technica

芬兰 Metla 森林研究中心

国家生物多样性基因组学实验室

NATIONAL LABORATORY OF GENOMICS FOR BIODIVERSITY

纽约州立大学石溪分校西蒙斯几何和物理中心

SUNY STONY BROOK SIMONS CENTER FOR GEOMETRY AND PHYSICS

蒙巴顿纳米技术研究中心

THE MOUNTBATTEN NANOTECHNOLOGY BUILDING CENTER

清华大学环境能源楼研究中心

SIEEB RESEARCH CENTER

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奥地利维也纳分子医学研究中心 ANNA SPIEGEL RESEARCH BUILDING

MARCUS NANOTECHNOLOGY RESEARCH CENTER

马库斯纳米技术研究中心

Architect: Bohlin Cywinski Jackson, M+W Zander

roject Team: Bernard J. Cywinski, David Murray, Todd Lynch, Anthony Pregiato, Erin Roark, Rick Miller, Joe Bridy, LB Young, Scott Sampson, Collin Robertson, Jay Sitton, George Murphy n: Atlanta, Georgia

Area: 17,651.58 m² Photographer: Nic Lehoux



The Marcus Nanotechnology Research Center is located on a highly visible, sloping site on the Georgia Tech campus. It is bordered by streets on two sides, an "Eco-Commons" landscape on another, and a new pedestrian path on the fourth side. It is a facility for ultraclean research and teaching activities ranging from microelectronics and semiconductors to nanotechnology.

The heart of the building is a light-filled central galleria that connects the transparent wing of laboratories, office and conference rooms to a 2787 square-meter cleanroom block that is wrapped in a copper screen. A wood assembly unfolds up the west wall and onto the ceiling. An LED light beam from the crease between wall and ceiling illuminates the galleria day and night. A skylit steel and glass stairwell is contained with an oval cylinder at the

south end of the space.

The three-storey cleanroom block is an open plan "ballroom" with large flexible space housing Class 10, Class 100, and Class 1000 cleanrooms, as well as laboratories. It is clad in ribbed, precast concrete panels. Stairwells, chemical storage tanks, heating and ventilation equipment, and air scrubbers arranged outboard of the cleanroom block. The exterior copper screen is perforated to varying degrees to allow different levels of daylight penetration into areas that support the opaque cleanrooms.

Integrated with the campus landscape the Nanotechnology Research Center reflects its program's rigorous technical requirements and forms a compelling place for people.

