
2025 ANNUAL REPORT



SCHOOL OF MEDICAL SCIENCES

Research & Innovation Division
Central Research Laboratory
USM-Cochrane Network
KPI & MyRA

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Forewords

Deputy Dean Research & Innovation
School of Medical Sciences

**Assalamualaikum W.B.T and
Salam Sejahtera.**

It is my great pleasure to present the
**2025 Annual Report of the
Research & Innovation Division,
School of Medical Sciences,
Universiti Sains Malaysia (USM).**

This report reflects another
significant year in our continuous
pursuit of excellence in research,
innovation, knowledge translation
and academic impact.

The year **2025** has been marked by
remarkable achievements despite
the rapidly evolving landscape of
higher education and biomedical
research. Our researchers have
continued to demonstrate resilience,
creativity and commitment in
producing high-quality research that
addresses pressing healthcare
challenges while contributing to
scientific advancement and national
development. The School remains
steadfast in fostering a vibrant
research ecosystem that
encourages multidisciplinary
collaboration, innovation and
impactful discoveries.



A key milestone during the year has been the strengthening of our **Research Cluster Initiative**, which serves as a strategic platform to unite researchers with complementary expertise around priority areas of medical and health sciences. Through these research clusters, we have enhanced interdisciplinary collaborations, promoted resource sharing, nurtured emerging researchers and strengthened partnerships with healthcare institutions, industry, government agencies and international collaborators. This initiative has not only improved research productivity but has also facilitated the translation of scientific discoveries into meaningful health solutions that benefit society.

Our accomplishments throughout the year include notable successes in securing competitive research grants, increasing publications in high-impact journals, strengthening postgraduate research training, enhancing laboratory services, and advancing innovation and commercialization activities. We have also made significant progress in research visibility through international collaborations, citation performance and contributions to institutional excellence indicators such as the **Malaysia Research Assessment (MyRA)** and global university rankings.

The **Research & Innovation Division** continues to provide comprehensive support through efficient research governance, ethics administration, laboratory management, publication excellence programmes, intellectual property development, grant facilitation and research capacity-building initiatives. These efforts are complemented by continuous engagement activities designed to cultivate a culture of excellence, integrity and innovation among our academic staff, researchers and postgraduate students.

This report also highlights the invaluable contributions of the **Central Research Laboratory**, the **USM-Cochrane Network** and our nine **Research Clusters**, which collectively form the backbone of the School's research ecosystem. Their dedication, expertise and collaborative spirit have significantly strengthened our research capabilities while creating opportunities for interdisciplinary discoveries and sustainable research growth.

As we look ahead, the **School of Medical Sciences** remains committed to embracing emerging technologies, artificial intelligence, precision medicine, digital health, translational research and data-driven biomedical sciences. By empowering our **Research Clusters** and strengthening strategic collaborations across disciplines and institutions, we aim to accelerate scientific innovation, enhance research excellence and increase our global impact in medical and health sciences.

I would like to express my sincere appreciation to all academic staff, researchers, laboratory personnel, scientific and administrative officers, postgraduate students, collaborators, funding agencies, healthcare partners and industry stakeholders for their unwavering dedication and invaluable contributions throughout the year. Your commitment continues to drive the School towards greater excellence and meaningful societal impact.

Finally, I hope this **Annual Report** serves not only as a record of our achievements but also as a testament to the collective efforts of our research community. Together, we will continue to strengthen our culture of research excellence, foster innovation through collaboration and contribute towards improving health and well-being locally, nationally and globally.

Thank you.

Professor Dr. Asrenee Ab. Razak
Deputy Dean Research & Innovation
School of Medical Sciences, Universiti Sains Malaysia

At a Glance

School of Medical Sciences (PPSP)



The School of Medical Sciences – Pusat Pengajian Sains Perubatan (PPSP), University Sains Malaysia (USM) at the initial stage of its establishment (June 1979) was located at the USM Penang Campus. PPSP has been fully operational at USM Health Campus, Kubang Kerian, Kelantan since June 1990 which meets the pre-clinical and clinical study requirements of the Medical Science (MD) program. The USM Health Campus in Kubang Kerian was developed on a 220-acre land that includes PPSP and USM's teaching hospital (USM Hospital; HUSM) which was established in October 1983, which in turn catalyzed the establishment of the School of Dental Sciences (PPSG) and the School of Health Sciences (PPSK).

School of Medical Sciences is the first Medical School in Malaysia to adopt an innovative curriculum that integrated various subjects thought in Medicine from year one through a problem-based learning (PBL) approach with an emphasis on community engagement.



In the period of existence that has exceeded 40 years, PPSP has concentrated efforts and devotion in various fields related to academics, research and networking at the local and international levels, in line with its pure and sustainable mission and vision.



Vision

Medicine for Tomorrow's Sustainability.

Mission

To provide internationally recognized medical science studies, the highest quality services and lead translational research for a sustainable ecosystem.

Motto

Compassionate Professional.

Division of Research & Innovation

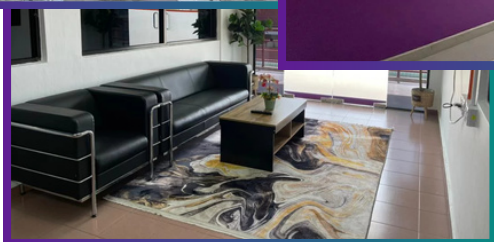
*Accelerate Research
Excellence*



Organization



Division of Research & Innovation



Welcome to the **Research and Innovation Division** - a dynamic hub dedicated to advancing scientific discovery and fostering innovation within our Medical School. As the cornerstone of research excellence, this office serves as a catalyst for collaborative exploration, empowering faculty, students, and healthcare professionals to push the boundaries of medical knowledge.

Whether you are embarking on pioneering studies, seeking guidance for innovative projects, or looking to connect with fellow researchers, the Research and Innovation Division is here to inspire, enable, and elevate your contributions to the field of medicine.

Research Committee (2024-2025)

The **Research Committee** at the School of Medical Sciences (PPSP), Universiti Sains Malaysia (USM), is a formal committee established to **support, coordinate, and oversee** research-related activities within the medical school. Its main functions include guiding internal research strategy, evaluating research proposals, advising on research policy, and supporting quality research output among academic staff and postgraduate students. Research proposals and internal grants (like the Short Term Grant, Geran Penyelidikan Perubatan etc.) are reviewed and assessed through this committee's oversight before approval.

Research Committee Meeting



Research Committee (2024-2025)

Research Committee Member

			
Prof. Dr. Asrene Ab. Razak <i>Chairperson</i>	Prof. Dr. Rosline Hassan <i>Committee Member</i>	Prof. Dr. Azidah Kadir <i>Committee Member</i>	Prof. Dr. Liza Sharmini Ahmad Tajudin <i>Committee Member</i>
			
Prof. Dr. Chan Yean Yean <i>Committee Member</i>	Prof. Dr. Kamarul Imran Musa <i>Committee Member</i>	Prof. Dr. Mahaneem Mohamed <i>Committee Member</i>	Prof. Dr. Rosediani Muhamad <i>Committee Member</i>
			
Prof. Dr. Norhafiza Mat Lazim <i>Committee Member</i>	Assoc. Prof. Dr. Wan Mohd Zahiruddin Wan Mohammad <i>Committee Member</i>	Assoc. Prof. Dr. Muzaimi Mustapha <i>Committee Member</i>	Assoc. Prof. Dr. Kirnpal Kaur Banga Singh <i>Committee Member</i>

			
Assoc. Prof. Dr. Wan Faiziah Wan Abdul Rahman <i>Committee Member</i>	Assoc. Prof. Dr. Kueh Yee Cheng <i>Committee Member</i>	Assoc. Prof. Dr. Tuan Hairulnizam Tuan Kamauzaman <i>Committee Member</i>	Assoc. Prof. Dr. Rohimah Mohamud <i>Committee Member</i>
			
Dr. Zefarina Zulkafli <i>Committee Member</i>	Dr. Nazihah Mohd Yunus <i>Committee Member</i>	Mr. Che Ismail Che Lah <i>Secretary</i>	Mdm. Abdah Karimah Che Md. Nor <i>Assistant Secretary</i>
			
Mr. Zulkefli Sanip <i>Assistant Secretary</i>	Mdm. Wan Roslizawane Wan Yusuf <i>Secretariat</i>	Ms. Nurkhalisya Widad Mohd Ruslan <i>Secretariat</i>	

Research Grants

Grant Application and Approval

TYPES OF GRANT	INTER NATIONAL	NATIONAL	INDUSTRY	UNIVERSITY	TOTAL APPLICATION (submit to R&I office)	TOTAL OF APPROVED GRANT	TOTAL (RM)
FRGS	-	9	-	-	67	9	1,179,456.00
EXTERNAL GRANT	5	8	10	3	28	26	883,414.28
SHORT TERM GRANT	-	-	-	10	17	10	327,653.00
RU TRANS	-	-	-	1	-	1	112,000.00
RU TEAM	-	-	-	1	-	1	71,000.00
BRIDGING	-	-	-	27	-	27	519,444.00
BRIDGING (KHAS)	-	-	-	1	-	1	19,800.00
BJIM	-	-	-	14	-	14	400,646.35
PENYELIDIKAN PERUBATAN	-	-	-	48	87	48	999,500.00
BOOK PUBLICATION	-	-	-	4	-	4	80,000.00
INOVASI & PEMBANGUNAN PRODUK	-	1	-	-	-	1	25,000.00
TOTAL	6	17	10	109	198	144	4,617,913.63

Research Grants

Grant Application and Approval



While University Grants drive the volume of research activity, **FRGS** and **External Grants** provide the most significant financial impact, together making up nearly **45%** of the total approved funding.



Research Grants

Grant Final Report

Short Term

12

RUI

5

External

10

GIPS-PhD

2

International Incentive
Scheme (I2S)

1

Bridging

1

TOTAL

31



KPI/MyRA Activities

Year-round

- WOS indexed journal APC payment assistance Q1 Q2
- Payment assistance for the publication of JCR/ISI Q3/SCOPUS Indexed Journals (RM2000.00/per article)
 - Payment assistance for journal services (Enago/Scribendi)
- Incentive assistance for the purchase of research materials and subject/patient honorarium payments for lecturers who do not yet have a research grant (maximum RM5000.00)
 - PPSP Graduate Publication Incentive
- Maintenance and repair of laboratory equipment for research use (service and spare parts)
- Activities to support the achievement of KPIs under the Research & Innovation Division
 - Complementary projects of the Central Research Laboratory (CRL)
 - Assistance for activities/programs to improve KPI MyRA Departmental assistance for activities/programs at the department level (RM1000.00 per department)
- Research & Innovation Division management/operation allocation (Vot 23000 & Vot 27000)

Yearly-event

- PPSP Research Excellence Award Program 2024

Publications

Distribution of Publication Incentive Q1 & Q2

Total payment:
RM 684,228.97
(2023,2024,2025)

Allocation balance:
RM 115,771.03

**March
2020**

RM 180,000

**April
2021**

RM 150,000

**August
2021**

RM 250,000

**February
2022**

RM 300,000

**July
2022**

RM 350,000

**November
2022**

RM 150,000

**March
2023**

RM 800,000

TOTAL

RM2,180,000

Publications

Q1 and Q2

YEAR	APPLICATION	Q1	Q2	TOTAL
2021	120	62	58	120
2022	156	76	80	156
2023	39	22	23	45
2024	40	20	14	34
2025	41	19	37	56
OVERALL TOTAL				411

AVERAGE PAYMENT (RM):
RM 5,304.14 / ARTICLE

Research Cluster

Nine (9) **Research Clusters** have been established to be a platform for researchers who are experts in their respective fields to formulate strategies and improve a more **systematic, high quality and sustainable** research ecosystem. This initiative is expected to improve the performance and visibility of impactful research in PPSP and USM.

RESEARCH CLUSTER	ALLOCATION (RM)
Advanced Biomedical Technology Research	1,166,694.46
Cancer Research & Oncology	1,789,280.00
Digital Sciences & Health Professions Education	494,880.00
Genomics & Life Sciences	1,578,669.79
Honey & Natural Product	415,866.00
Visual, Sinus, Allergy & Auditory Sciences	516,336.25
Public Health, Aging & Lifestyle	755,721.00
Trauma, Surgical & Critical Care	689,487.91
Neurosciences, Mental Health & Rehabilitation	938,584.00
TOTAL	8,345,519.41

Research Cluster

Research Clusters Activities



APRIL 21 *Research Collaboration Meeting: Dementia Multidisciplinary Research Group – Institut Perubatan Dan Pergigian Termaju (DMR-IPPT), USM and PPSP.*

ASM-USM Meet and Greet. Renowned Cancer Researcher of Academy Science of Malaysia. Prof Datin Paduka Dr Teo Soo Hwang.

JUNE 24



JULY 7 *Research Collaboration Visit Between Genomic & Life Sciences Cluster, Research & Innovation Division, School of Medical Sciences - PPSP And Faculty of Doctoral, University of Padjajaran, Bandung Indonesia.*

SEAOHUN–USM MINI-EVENT Southeast Asia One Health Workforce Academies (SEA-OHWA) University Tour, DK4, School of Medical Sciences, USM.

OCTOBER 28



OCTOBER 24-25 *Participation of Researchers in Festival of Idea (FOI) Penang, PENANG WATERFRONT CONVENTION CENTRE (PWCC).*

Research & Conference Collaboration USM-HSH Tyroid Cancer: A Multidiciplinary Paradigm in Precision Care, Hospital Universiti Hasan Sadikin, Bandung Indonesia.

DECEMBER 21-22



Graduate Publication Incentive

The Graduate Publication Incentive (GPI) is an PPSP initiative designed to encourage and support postgraduate students to publish high-quality research outputs in indexed and reputable journals. The programme aims to enhance research productivity, publication quality, and global visibility of postgraduate research while supporting timely graduation.

YEAR	ALLOCATION ACCEPTED (RM)	TOTAL RECIPIENTS	DISTRIBUTION (RM)	TOTAL PUBLICATION
2021	-	94	162,000	116
2022	250,000	129	186,000	192
2023	250,000	106	110,750	144
2024	-	107	98,250	132
2025	-	158	141,250	177
TOTAL	650,000	594	698,250	761

Key Performance Indicator (KPI-MyRA)

MyRA stands for **Malaysian Research Assessment Instrument**. It is a national research performance assessment system developed by the Ministry of Higher Education (MoHE) in Malaysia to evaluate the research capacity, quality, and impact of Higher Education Institutions (HEIs). The system uses structured indicators related to research, development, commercialisation, and innovation to benchmark institutions against national and global standards.

Research Grants for Academic Staff

- A. TOTAL AMOUNT OF UNIVERSITY RESEARCH FUNDS**
 i. Total Amount Pledged for New Projects - RM 2,626,769.35
 ii. Total Amount Received for Active Projects - RM7,572,653.95

- B. TOTAL AMOUNT OF NATIONAL RESEARCH FUNDS**
 i. Total Amount Pledged for New Projects - RM1,356,815.91
 ii. Total Amount Received for Active Projects - RM9,866,191.91

- C. TOTAL AMOUNT OF PRIVATE/ INDUSTRIAL/ NGO FUNDS (INCLUDING CONTRACT RESEARCH)**
 i. Total Amount Pledged for New Projects - RM1,356,815.91
 ii. Total Amount Received for Active Projects - RM9,866,191.91

- D. TOTAL AMOUNT OF INTERNATIONAL FUNDS**
 i. Total Amount Pledged for New Projects - RM3,940,58.37
 ii. Total Amount Received for Active Projects - RM983,611.50

- E. TOTAL AMOUNT OF RESEARCH GRANTS RECEIVED IN THE YEAR (C2A(II) + (C2B(II) + (C2C(II) - RM27,305,037.77**

Monitoring of Research Project Performance / Progress

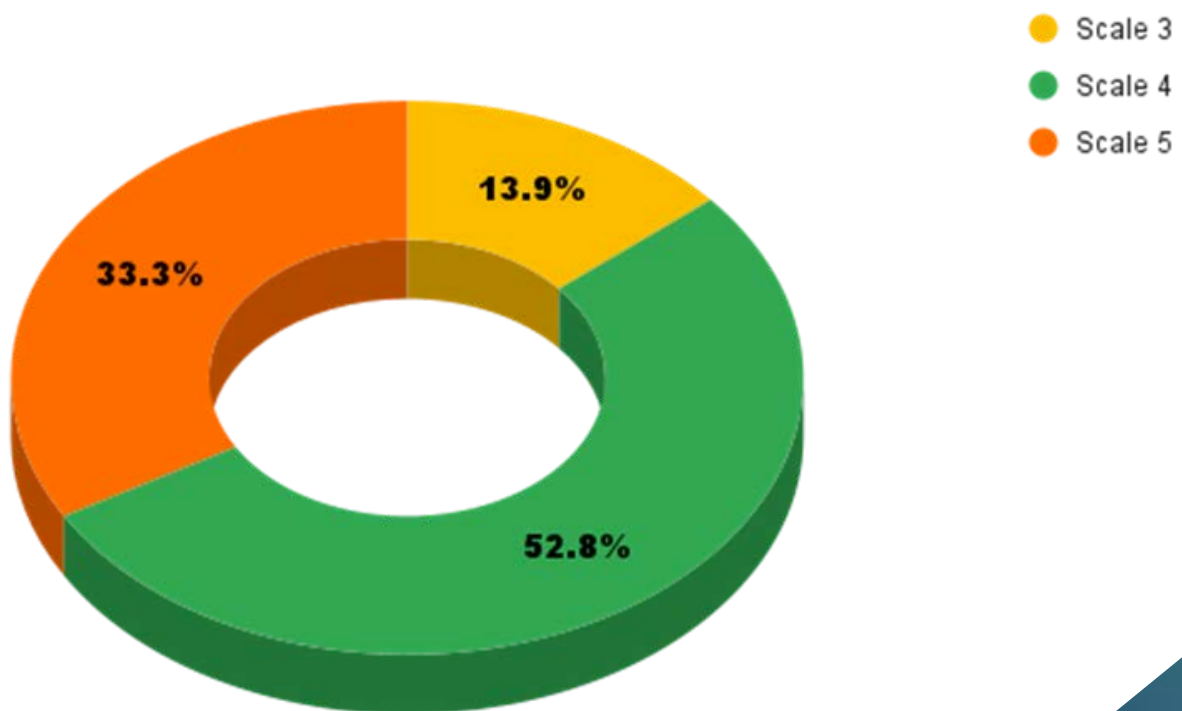
- a. Number of Research Projects Completed Without Extension in Year of Assessment (A) - 41
 b. Number of Research Projects Completed With Extension in Year of Assessment (B) - 60
 c. Percentage of Research Projects Completed on Time - 40.59%
 (40/101X100)

Customer Feedback

PPSP Research & Innovation Division customers rated the service on a scale of 4 & 5 (Good & Very Good). It is indicating that they were very satisfied or extremely satisfied with the service they received. This high rating suggests that the division is performing well in meeting customer expectations and delivering quality service. However, there is the suggestion for improvement to be considered such as:

- To help in ensuring a smooth evaluation process for research grant applications.
- It is proposed to organize a Research Retreat to foster research collaboration among PPSP members.

Overall performance: Keep up the excellent work.



Monthly Research Presentation (MRP)

MRP Team - 2025



The **Monthly Research Presentation** is a dynamic program designed to foster **research culture, visibility, quality, collaboration, knowledge sharing, and innovation** among our researchers. This initiative serves as a platform for researchers to present their latest findings, discuss emerging trends, and exchange ideas with colleagues from diverse disciplines. The goal of the program is to encourage learning, spark new collaborations, and keep research moving forward. Each presentation offers an opportunity for insightful feedback and discussion, ultimately driving progress in both individual and collective research efforts.

The MRP was organized around **nine research clusters** within PPSP, serving as the foundation for structuring and delivering the findings. Each cluster represented a focused area of inquiry, ensuring that the presentations captured the breadth and depth of ongoing research activities. By aligning the MRP with these clusters, PPSP was able to provide a systematic platform for sharing progress, highlighting key outcomes, and fostering collaboration across diverse research teams. This approach not only streamlined the dissemination of knowledge but also strengthened the integration of research efforts, allowing for clearer visibility of achievements and future directions across the nine clusters.

Monthly Research Presentation (MRP)

JANUARY

DIGITAL SCIENCES & HEALTH PROFESSIONS CLUSTER

Moderator: Assoc. Prof. Dr. Wong Kah Keng *Department of Immunology*

Presenter 1: Prof. Dr. Kamarul Aryffin Baharuddin *Dean, School of Medical Sciences*

Title: Artificial Intelligence in Emergency Medicine and Disaster Management.

Presenter 2: Dr. Afiq Izzudin A Rahim *Department of Community Medicine*

Title: Telemedicine during Disaster: Opportunities and Challengers.

FEBRUARY

HONEY & NATURAL PRODUCT SCIENCES CLUSTER

Moderator: Dr. Mohd Zulkifli Mustafa *Department of Neurosciences*

Presenter 1: Dr. Tuan Noorkorina Tuan Kub *Dept. of Medical Microbiology and Parasitology*

Title: The Cytotoxicity and Antimicrobial Activity of Andrographis Paniculata Herbal Mouthwash Formulation.

Presenter 2: Dr. Sabarisah Hashim *Department of Neurosciences*

Title: Exploring Neuroprotective Effect of Stingless Bee Honey Supplementation for Post-Stroke Cognitive Impairment.

APRIL

CANCER RESEARCH & ONCOLOGY CLUSTER

Moderator: Assoc. Prof. Dr. Wan Faiziah Wan Abdul Rahman *Department of Pathology*

Presenter 1: Assoc. Prof. Dr. Anani Aila Mat Zin *Department of Pathology*

Title: Digital Pathology: New Paradigm in Cancer Diagnostic.

Presenter 2: Assoc. Prof. Dr. Siti Azrin Ab Hamid *Biostatistics & Research Methodology Unit*

Title: Survival Analysis of Cancer Patients: Methods, Challenges and Key Findings.

MAY

TRAUMA, SURGICAL & CRITICAL CARE

Moderator: AP Dr. Tuan Hairulnizam Tuan Kamauzaman *Department of Emergency Medicine*

Presenter 1: Dr. Mohd Faiz Mohd Shukri *Department of Emergency Medicine*

Title: Knowledge and Attitude of Basic Cardiopulmonary Resuscitation among Home-Based Child Day Care Caregivers in Kelantan.

Presenter 2: AP Dr. Mohd Zulfakar Mazlan *Department of Anaesthesiology & Intensive Care*

Title: Evidence Based Quality Improvement for Prescribing Stewardship in ICU (EQUIPS-ICU): Protocol for Type III Hybrid Implementation-Effectiveness Study.

Monthly Research Presentation (MRP)

JUNE

PUBLIC HEALTH, AGEING & LIFESTYLE

Moderator: Assoc. Prof. Dr. Imran Ahmad *Department of Family Medicine*

Presenter 1: Assoc. Prof. Dr. Wan Syaheedah Wan Ghazali *Department of Physiology*

Title: The Effectiveness of Home-Based Circuit Training on Cardiovascular and Biochemical Parameters and Quality of Life among Overweight and Obese Patients with Knee Osteoarthritis and T2DM.

Presenter 2: Dr. Siti Nurbaya Mohd Nawi *Department of Internal Medicine*

Title: Hospital-Associated Deconditioning among Hospitalised Older Adults and Its Associated Factors.

JULY

ADVANCED BIOMEDICAL DIAGNOSTIC TECHNOLOGY

Moderator: Assoc. Prof. Dr. Rohimah Mohamud *Department of Immunology*

Presenter 1: Assoc. Prof. Dr. Faezahtul Arbaeyah Hussain *Department of Pathology*

Title: Aptahistochemistry via In-silico Aptamer Technology: A Revolution in Diagnostic Lymphoma.

Presenter 2: Assoc. Prof. Dr. Rafidah Hanim Shueb *Dept. of Microbiology and Parasitology*

Title: Quantum Dot Technology for Enhanced Sensitivity of Hepatitis B Rapid Test.

AUGUST

VISUAL, SINUS, ALLERGY & AUDITORY SCIENCE

Moderator: Prof. Dr. Ramiza Ramza Ramli *Dept. of Otorhinolaryngology-Head & Neck Surgery*

Presenter 1: Dr. Evelyn Tai Li Min *Department of Ophthalmology & Visual Science*

Title: Fluorescein Dye Disappearance Test, Endoscopic Dye Transit Time and Lacrimal Symptoms Severity Score in Patients with Patent Osteotomies after Surgery for Nasolacrimal Duct Obstruction.

Presenter 2: Prof. Dr. Norhafiza Mat Lazim *Dept. of Otorhinolaryngology-Head & Neck Surgery*

Title: A New Hybrid Therapy for Tongue Squamous Cell Carcinoma: Exploring the Potential of Nanoparticle.

SEPTEMBER

GENOMICS & LIFE SCIENCES

Moderator: Assoc. Prof. Dr. Sarina Sulong *Human Genome Centre*

Presenter 1: Dr. Nur Azida Mohd Nasir *Reconstructive Sciences Unit*

Title: Preserving Potential: Mechanical Isolation of Human ADSCs from Fresh and Cryopreserved Adipose Tissue.

Presenter 2: Assoc. Prof. Ts. Dr. Azlina Ahmad *School of Dental Sciences*

Title: How Does TGF β Signalling Influence Stem Cell Fate during Epithelial Differentiation?

Monthly Research Presentation (MRP)

OCTOBER

NEUROSCIENCES, MENTAL HEALTH & REHABILITATION

Moderator: Prof. Dr. Asrenee Ab. Razak *Department of Psychiatry*

Presenter 1: Dr. A'isyah Che Rahimi *Department of Psychiatry*

Title: The Effectiveness of Group Acceptance and Commitment Therapy (ACT) among Mild to Moderate Depressive Patients in Kelantan.

Presenter 2: Dr. Wan Mohd Aiman Wan Ab Rahman *Department of Paediatric*

Title: Neurodevelopment and Gross Motor Function Outcomes in Children at Risk or Diagnosed with Cerebral Palsy using Snoezelen Multisensory Room.



Achievements & Activities

***Bengkel Perancangan Strategik Kecemerlangan Staf Akademik Trek Penyelidikan Dan Standard
6 Januari 2025 | Bilik Persidangan PPSP***



***Workshop On Systematic Review and Meta Analysis: Train The Trainer
(4 Sessions) (2024/2025)***



Activities & Programmes

***Hari Bersama Pelanggan Bahagian Penyelidikan & Inovasi Dan Makmal Penyelidikan Pusat
27-31 Julai 2025 / Dataran Kelabu, PPSP***



***Sumbangan Raya Bersama Pusat Tahfiz / Peka Yatim, Jalan Bayam
Kelantan
23 Mac 2025***



Achievements & Activities

Sambutan Hari Raya Aidilfitri Bahagian Penyelidikan & Inovasi Dan Makmal Penyelidikan Pusat



Lawatan Dan Mesyuarat Kolaborasi Penyelidikan Dementia Multidisciplinary Research Group – Institut Perubatan Dan Pergigian Termaju (DMR-IPPT), USM Bertam Pulau Pinang Dan Pusat Pengajian Sains Perubatan, Kampus Kesihatan, Universiti Sains Malaysia 21 April 2025



Workabout Meeting

A Walkabout Meeting is an **informal, on-site engagement programme** where our Top management of PPSP (Exco Dekan) members **physically visit departments, laboratories, units, or facilities** to:

- Observe **ongoing activities and operations** first hand
- Engage directly with **staff, researchers, or students**
- Identify **issues, needs, risks, and good practices** in real working environments
- Provide **immediate feedback, guidance, and strategic direction**
- Strengthen **communication and visibility of leadership**



Research & Innovation Office

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16150 Kubang Kerian, Kelantan

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Central Research Laboratory

A Laboratory To All
connect.collaborate.inspire



Organization



Introduction



Welcome to the **Central Research Laboratory (CRL)** - a cornerstone of scientific advancement within our Medical School. Designed to support and drive excellence in medical research, this facility serves as the nexus for ground-breaking studies, interdisciplinary collaboration, and technological innovation.

Equipped with various instrumentation and a team of dedicated staffs, the laboratory provides researchers and students with the resources they need to conduct high-impact studies. From molecular biology to imaging techniques, the CRL enables exploration across a diverse range of medical disciplines, fostering discoveries that transform healthcare practices and improve patient outcomes.

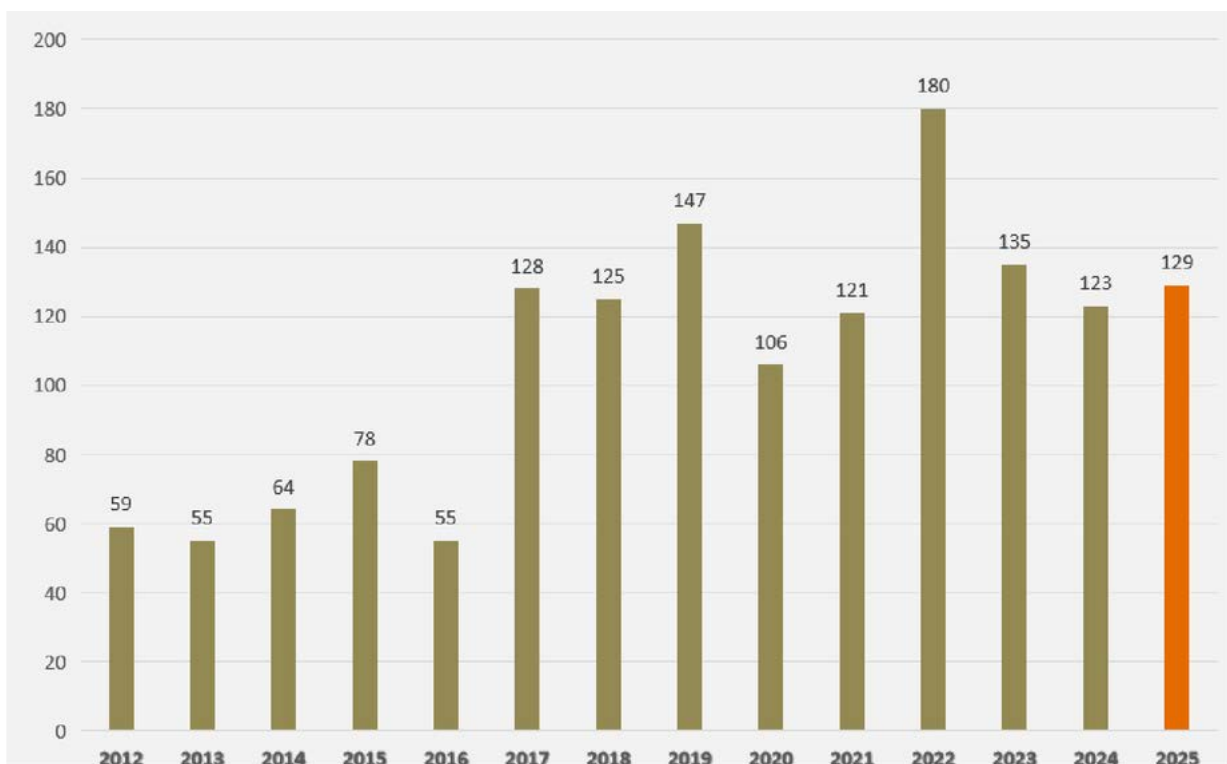
CRL is committed to nurturing the next generation of medical scientists while advancing the frontiers of knowledge. Together, we strive to empower research that addresses pressing global health challenges and sets new standards for excellence in medical science.

Executive Summary

In 2025, the Central Research Laboratory (CRL) achieved significant growth in research support capabilities, operational performance, and financial sustainability, while continuing to play a pivotal role in supporting research activities across the Health Campus. Through strategic procurement, diverse project collaborations, and optimized budget utilization, CRL established a steady revenue stream, maintained strong user engagement, provided multidisciplinary research support, and facilitated access to advanced laboratory services for researchers from various schools and external institutions; demonstrating a consistent upward trajectory in key metrics: service diversification, customer satisfaction, and a diverse researcher demographic.

User Engagement & Growth

Registration Trends: The laboratory has tracked and maintained a steady increase in registered users from 2012 through 2025. In 2025, CRL recorded a total of 129 registered users, demonstrating sustained demand for its facilities and expertise. The Molecular Biology and Analytical Biochemistry sections remained the primary contributors to laboratory utilization.

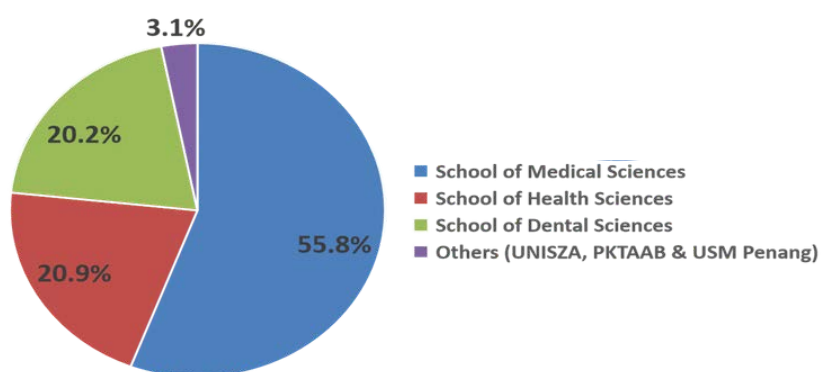


User Engagement & Growth

User Demographics & Diversification:

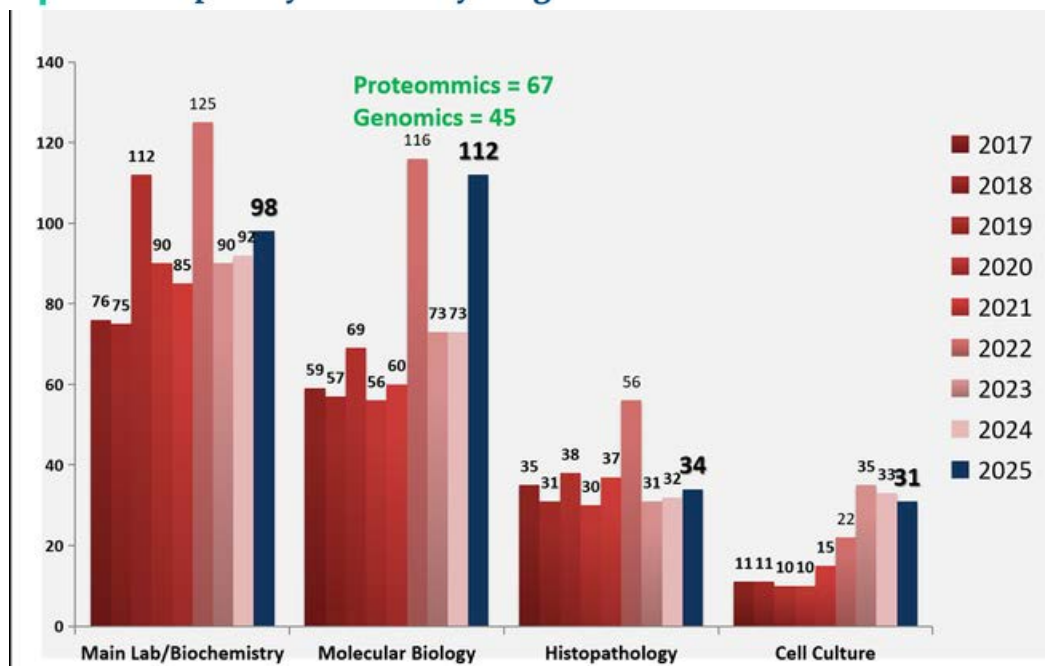
CRL serves as a critical multi-disciplinary hub, primarily supporting the next generation of scientists, with a significant expansion in its registered user base in 2025; reflecting its growing importance as a research hub. The majority of users originated from the School of Medical Sciences (55.8%), followed by the School of Health Sciences (20.9%) and the School of Dental Sciences (20.2%).

Distribution by School



Section-Specific Performance: Data from 2017 to 2025 indicates specialized growth across various laboratory sections. The laboratory successfully manages a wide range of researchers categorized by their respective Responsibility Centers (PTJ) and technical sections. This multifaceted approach ensures that CRL's high-end instrumentation serves a broad spectrum of scientific disciplines.

Interdisciplinary Laboratory Usage



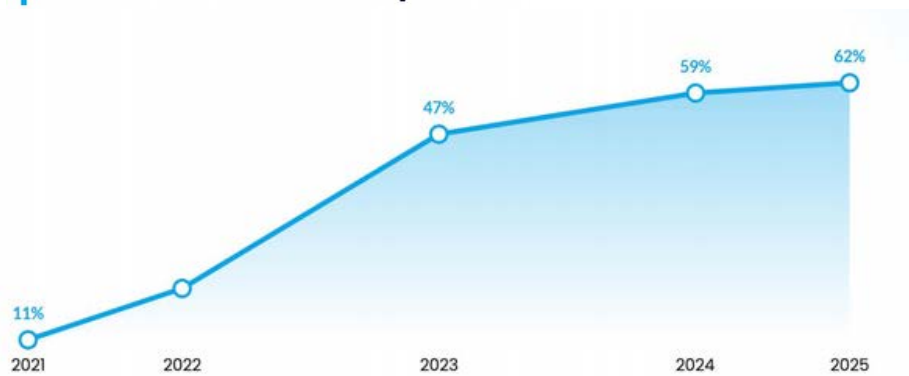
The Analytical Biochemistry section remains the primary contributor to laboratory utilization at CRL, recording 98 users in 2025 as core infrastructure for analytical research. The Molecular Biology Laboratory saw a substantial jump to 112 users, reflecting growing demand for genomics, PCR-based diagnostics, and advanced molecular techniques. Histopathology recorded 34 users in 2025, vital for tissue-based disease investigation and cancer studies. Cell Culture had 31 users in 2025, with growth reflecting increasing in vitro experimental research.

Customer Satisfaction & Impact

The 2025 operational year for the Central Research Laboratory (CRL) is characterized by high levels of user satisfaction. With 80 verified responses for the year, the impact data highlights excellence in staff cooperation, facility safety, and an efficient booking system.

The "Impact through Satisfaction" metric is measured via annual respondent percentages, showing a clear trend of increasing engagement and positive feedback. The steady rise from 11% in 2022 to 62% in 2025 reflects CRL's commitment to service excellence and its ability to meet the evolving needs of the research community.

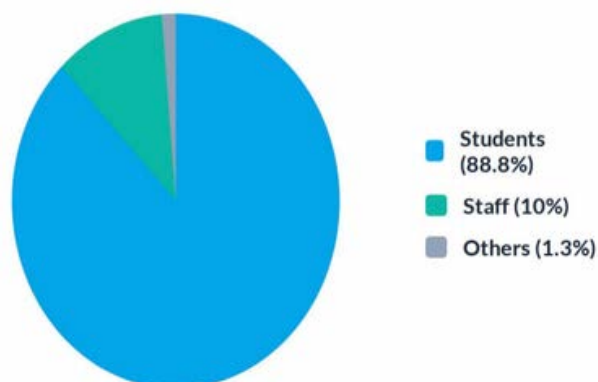
Growth in Feedback Responses



Feedback trends show a consistent increase since 2021, reaching 62% response rate in 2025.

Applicant Categories: Students represent the vast majority of lab users at 88.8% (71 individuals), followed by staff at 10% (8 individuals).

2025 Applicant Profile



Customer Satisfaction & Impact

Responses by PTJ: PPSP dominates participation, providing 70% of feedback (56 responses), indicating it is the primary user base or most engaged with CRL services. PPSG and PPSK collectively contribute 30%, though their engagement is comparatively lower. There was no participation from external or other category.



Facility & Equipment Performance: High satisfaction scores across infrastructure metrics indicate a research environment that is both safe and optimized for high-level output.

Facility Quality: Safety, Cleanliness & Storage Availability



Equipment Performance: Technical Condition

Equipment Performance Metrics

Equipment Assessment Parameter	Score 4 (Very Good)	Score 3 (Good)
Equipment Always in Optimum Condition	78.8%	20.0%
Relevant and Accessible Equipment	82.3%	17.7%
Easy to Understand Operation Manuals	71.3%	26.3%

**Data based on 79-80 respondents per category.*

Customer Satisfaction & Impact

Staff & System: Service Quality and Professional Support

Service Quality



Staff Cooperation

89.9% agree that staff provide excellent cooperation to researchers.



Staff Skills

82.3% recognize that staff possess the required technical knowledge.



Booking System

88.8% find the equipment application system relevant and easy to use.

Responsiveness: Approval turnaround times were rated positively by 85.7% of users.

Future Growth & Strategic Requirements :

To maintain this momentum, users have identified critical areas for investment and improvement:

High-Priority Equipment: There is significant demand for Confocal Microscopes (4 requests) and Electron Microscopy (FESEM/SEM/TEM) (3 requests) to support morphological analysis.

Operational Optimization: Key suggestions include stricter enforcement of lab booking slots to prevent wasted time and improved waste management protocols for laboratory bins.

Infrastructure & Facility Upgrade

Equipment Maintenance: RM 46,248 dedicated to ensuring the longevity and accuracy of laboratory tools.

Branding & Visibility: Investment in new CRL signage to enhance the laboratory's professional identity within the university.



Safety System Enhancement: Implementation of the Local Exhaust Ventilation (LEV) system in the Histopathology Section, amounting to RM 67,000, to address safety concerns.

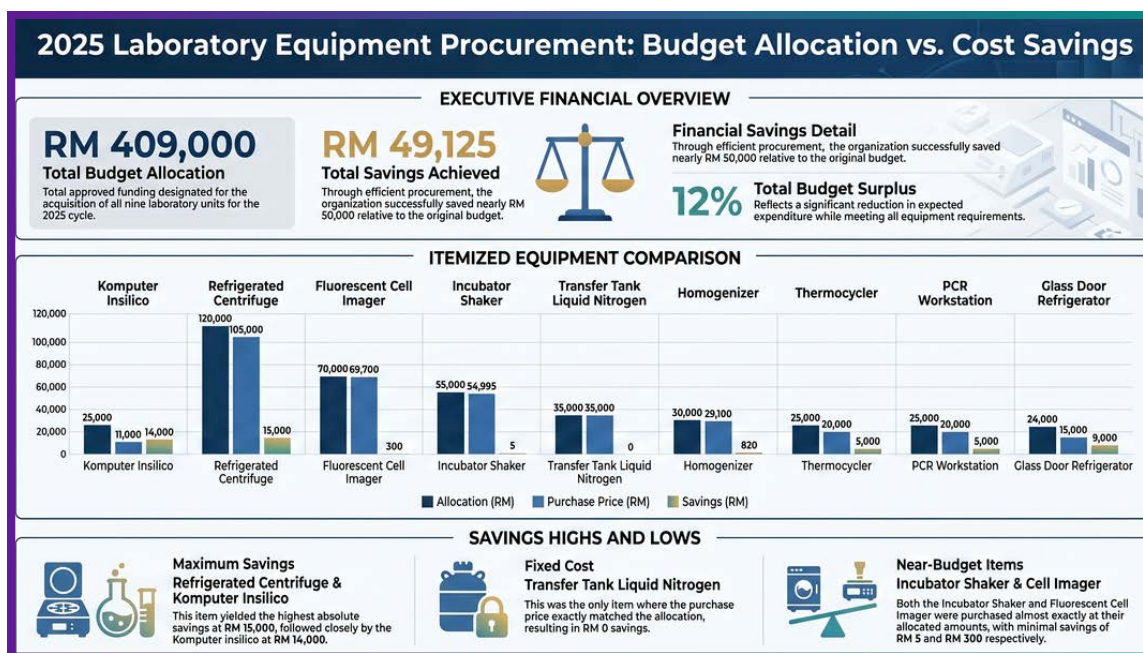


Renovation of Tissue Culture Section: RM 181,000 allocated for renovations to support and strengthen related research activities.



Strategic Procurement & Resource Optimization

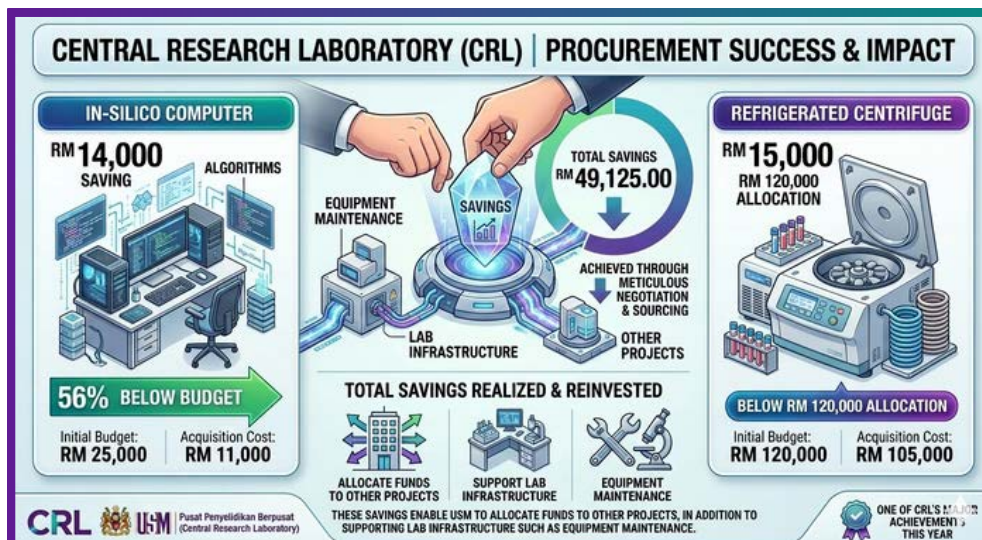
One of CRL's major achievements in 2025 was the efficient acquisition of high-end research equipment. CRL secured 9 major pieces, enhancing core functions like in-silico simulation, centrifugation, imaging, and storage. These investments strengthen CRL's capacity in cell analysis, genomics, and sample preservation, positioning it as a key USM research asset.



The approved budget of RM409,000 was managed effectively, with actual expenditure totaling **RM 359,875**. Through meticulous negotiation, CRL realized total savings of **RM 49,125** (average 90% budget utilization).

Notable Procurement Successes:

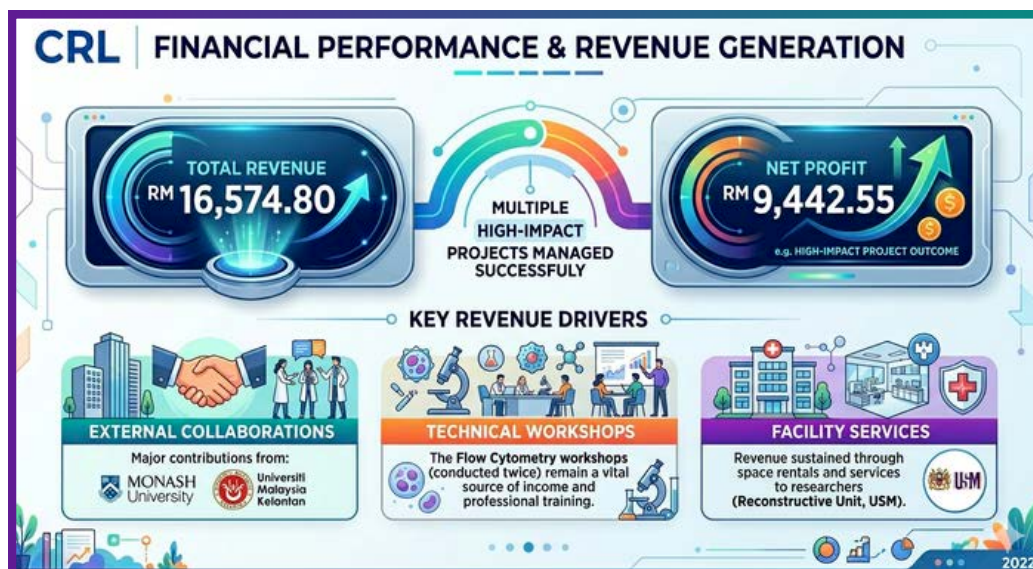
- In-silico Computer: Achieved a RM 14,000 saving (56% below budget).
- Refrigerated Centrifuge: Secured at RM 15,000 below the allocated RM 120,000.



These savings enable USM to allocate funds to other projects, in addition to supporting laboratory infrastructure such as equipment maintenance.

Financial Performance & Revenue Generation

CRL successfully managed multiple high-impact projects, generating a total revenue of **RM 16,574.80**, with a net profit of **RM 9,442.55**.



Key Revenue Drivers:

- **External Collaborations:** Major contributions from Monash University Malaysia and Universiti Malaysia Kelantan (UMK).



Monash University Malaysia



Universiti Malaysia Kelantan

- **Technical Workshops:** The Flow Cytometry workshops (conducted twice) remain a vital source of income and professional training.



Flow Cytometry Workshop Vol. 1 and Vol. 2 Year 2025

Financial Performance & Revenue Generation

Facility Services: Revenue sustained through space rentals and services to researchers (Reconstructive Sciences Unit, USM).



Project with Researcher from Reconstructive Sciences Unit



Activities

Meetings

This scope covers management, operational planning, and specific project discussions.

- **Management & Strategy:** First Management Meeting (14 Jan), Mid-Year KPI Review (22 July), 2026 Strategic Planning Workshop (17 Dec), and Endorsement of 2026 Strategic Plan (22 Dec).
- **Technical & Equipment Specifications:** Equipment Specification Meetings (17 Feb, 11 March, 14 May).
- **Project & Collaborative:** CRL-Monash University Project Meeting (18 Feb), meetings with R&I Office (10 March, 15 May), and the USM Biobank Committee Meeting (27 April).
- **Operational & User-Focused:** Meeting with Flow Cytometer users (26 Feb), Flow Cytometry Expert meeting (16 April), and Open Day preparation meetings (25–26 June).
- **Administrative:** 1st AGM for the CRL Welfare Club (17 April) and JPPF meeting regarding CRL renovation plans (16 Nov).



Demonstrations

These activities involve showcasing new technology or equipment capabilities to the staff and research.

- **Equipment Trials:** PCR Equipment Demo (9 April) and Fluorescence Cell Imager Demo (17 April).
- **Advanced Systems:** SQRAY SQS-120P Slide Scanning System by UC Bioscience (26 May).
- **Analytical Functions:** Time-Resolved Fluorescence (TRF) function on a Microplate Reader (26 Nov) and Advanced Microscope demo by Keyence Malaysia (10 Dec).



Activities

Training

This is the most frequent activity, focusing on technical competency and equipment onboarding (Testing & Commissioning).

- **Equipment T&C and User Training:** Includes Centrifuge (19 Jan), Gel Electrophoresis (26 Feb), Automated Cell Counter (24 April), Biosafety Cabinet (25 April), Gel Documentation System (6–8 May), Double Door Refrigerator and Homogenizer (21 May), Microplate Reader and Insilico Simulation System (27 May), Thermocycler (26 June) and Incubator Shaker (27 Oct).
- **Specialized Workshops:** FlowJo Data Analysis (4 Feb), Isolate PBMC (23 Feb), Water Purification System (19 March), Real-Time PCR & Nanopore Sequencing (20 May), Flow Cytometer Enhancement Workshops (13–18 May and 29–30 July) and Antibacterial Analysis Workshop (16 May).
- **General & ICT Training:** LESIS Workshop (12 Jan) and Digital Content Creation using Canva & Yootheme (4 Aug).



Activities

Other Activities

This scope includes social events, site visits, community outreach, and facility maintenance.

- **Visits & Tours:** Monash University site visit (24 Feb), School study tour/Lab Tour (28 July) and visit to the Tissue Bank Unit (2 Dec).
- **Social & Welfare:** Staff birthday celebrations and Ramadan/Raya events (25 Feb, 24 March, 23 April, 3 July, 2 Nov, 15 Dec), and the Annual Lunch (17 Dec).
- **Community & Corporate:** Orphanage contribution project (24 March), and participation in the LabAsia 2025 Conference (14–16 July).
- **Maintenance & Safety:** Gotong Royong (22 May, 16 Nov, 4 Dec), Health surveillance for chemical exposure (16 Nov), and HIRARC briefing (2 Dec).



The Way Forward - 2026 Strategic Outlook



Building on the financial stability established in 2025, CRL aims to accelerate its growth through the following strategic pillars:

- 1. Commercialization of Expertise:** Expand the Paid Workshop by increasing the frequency and diversity of high-demand technical training sessions, positioning CRL as a premier revenue-generating training hub.
- 2. External & Industrial Visibility:** Aggressively enhance CRL's brand presence to attract external investors, industry partners, and researchers from outside USM. By showcasing our advanced facilities, we aim to foster high-impact industrial collaborations and joint ventures.
- 3. Strategic Incentive Programs:** Further refine the "CRL Heroes" initiative to incentivize high-value, revenue-generating research projects and strengthen long-term professional partnerships.
- 4. Staff Empowerment & Holistic Growth:** Encourage staff to spearhead innovative projects that balance financial sustainability with the Happiness Index.

The Way Forward - 2026 Strategic Outlook

PERANCANGAN TAHUN 2026

Bengkel Perancangan
Strategik 2026

17 Disember 2025

H-Elite Design Hotel



PERANCANGAN TAHUN 2026



**17 PROJEK
DIBENTANGKAN**

CRL HEROES: BRING IN OR GENERATE REVENUE PROJECTS!

UNLOCK REWARDS FOR YOUR PROJECT WINS!
Power CRL Lab's success—your expertise deserves recognition and real rewards!

YOUR EXCLUSIVE INCENTIVES:



1. **DEAN'S APPRECIATION AWARD** – Official praise from the Dean for your stellar contributions!

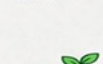


2. **30% PROFIT SHARE** – Pocket 30% of the project's net profits—earn what you deserve!

WHY BE A CRL HERO?



1. **DRIVE INNOVATION:** Lead revenue-generating projects



2. **SHINE BRIGHT:** Boost your profile with prestige and visibility.



3. **THRIVE FINANCIALLY:** Turn projects into personal gains—more income, more impact!

CLAIM YOUR HERO STATUS NOW!

Submit proposals today and step into the spotlight.



"Be the hero CRL needs—bring in projects and win big!"

Opportunities await—act now!

USM APEX[®] CRL
UNIVERSITI SAINS MALAYSIA CENTRAL RESEARCH LABORATORY
**CENTRAL
RESEARCH
LABORATORY**
SCHOOL OF MEDICAL SCIENCES

USM-Cochrane Network Site

Where Review Matters



Organization



Cochrane is an international not-for-profit organization, which aims to help people make well-informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews of the effects of health care interventions.

Worldwide, the Cochrane Collaboration has over 130,000 people in more than 130 countries contributing in some way, whether as authors, editors, peer referees, etc. Almost all these people are volunteers. We operate in a much decentralized structure. We have a small Secretariat in Oxford and an Editor in Chief's office in London, but the majority of the work of the Collaboration is done by Cochrane Review Groups.

The Cochrane activities in Australasia and South East Asia are coordinated by Cochrane Australia. The coordinating centre in Malaysia is the Royal College of Surgeons in Ireland and University College Dublin Malaysia Campus. **Universiti Sains Malaysia** is one of the affiliate centres who work together locally and is recognized by Cochrane.

Activities

PPSP Systematic Review and Meta-Analysis Training of Trainers (ToT) Workshop Series

This workshop series represents the continuation of the 2024 initiative, extended through December 2025 as part of ongoing capacity-building efforts within Universiti Sains Malaysia.

Aim

- Enhance participants' knowledge and understanding of systematic reviews and meta-analyses
- Develop practical competencies in conducting systematic reviews and meta-analyses
- Promote effective reporting and dissemination of research findings
- Prepare participants for future roles in teaching and supervision
- Foster a collaborative and supportive learning environment
- Ensure adherence to best practices in systematic review methodology

Implementation

The workshop series was conducted over five structured sessions, involving 35 academic staff members. The sessions combined both theoretical instruction and hands-on practical training to ensure comprehensive skill acquisition.

Content Overview

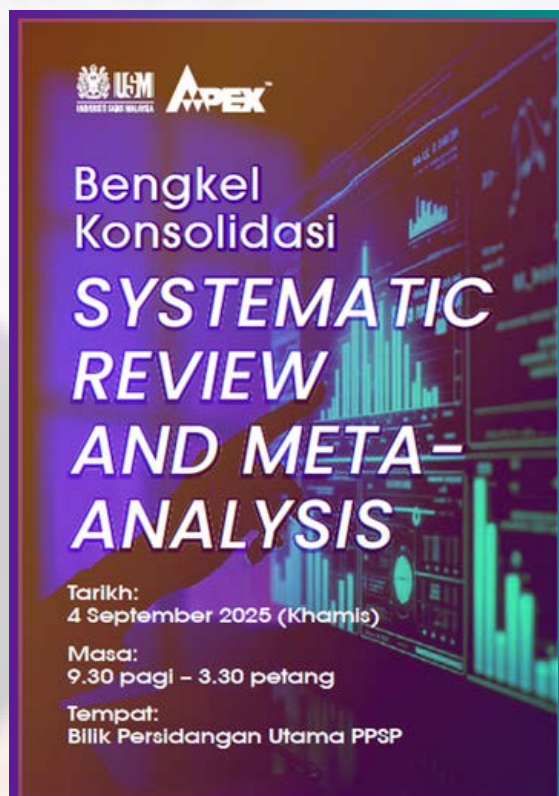
- Introduction to systematic reviews and meta-analyses
- Formulation of research questions and protocol development
- Development of comprehensive literature search strategies
- Study selection and data extraction processes
- Assessment of study quality and risk of bias
- Data synthesis and meta-analysis methods
- Reporting and dissemination of findings
- Teaching and supervision of systematic reviews and meta-analyses

Outcome and Impact

The workshop strengthened institutional capacity in evidence synthesis by equipping participants with both foundational knowledge and applied skills. Participants were better prepared to:

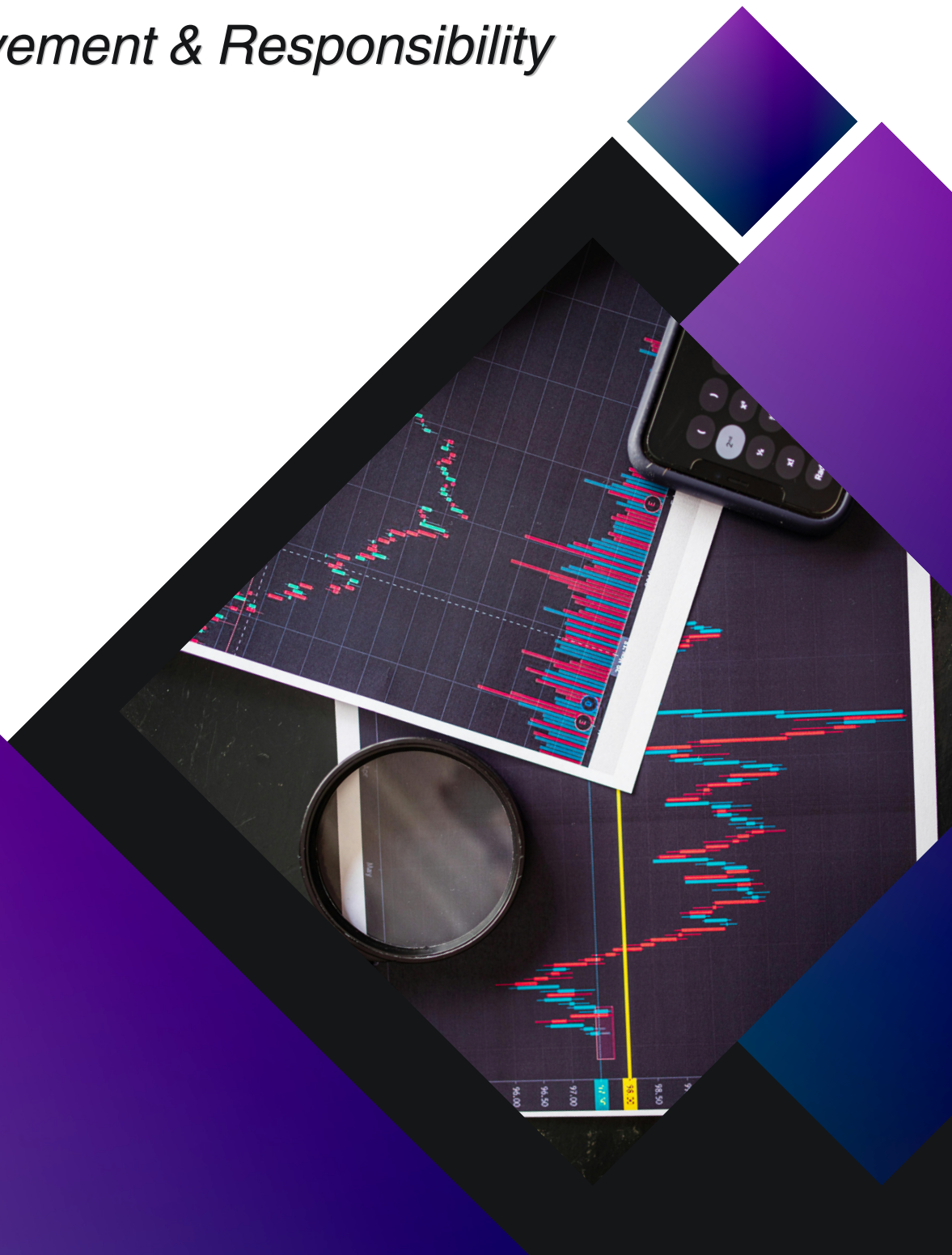
- Conduct high-quality systematic reviews independently
- Supervise postgraduate students undertaking systematic reviews
- Integrate evidence-based methodologies into teaching and research

Activities



KPI & MyRA Achievement

Achievement & Responsibility



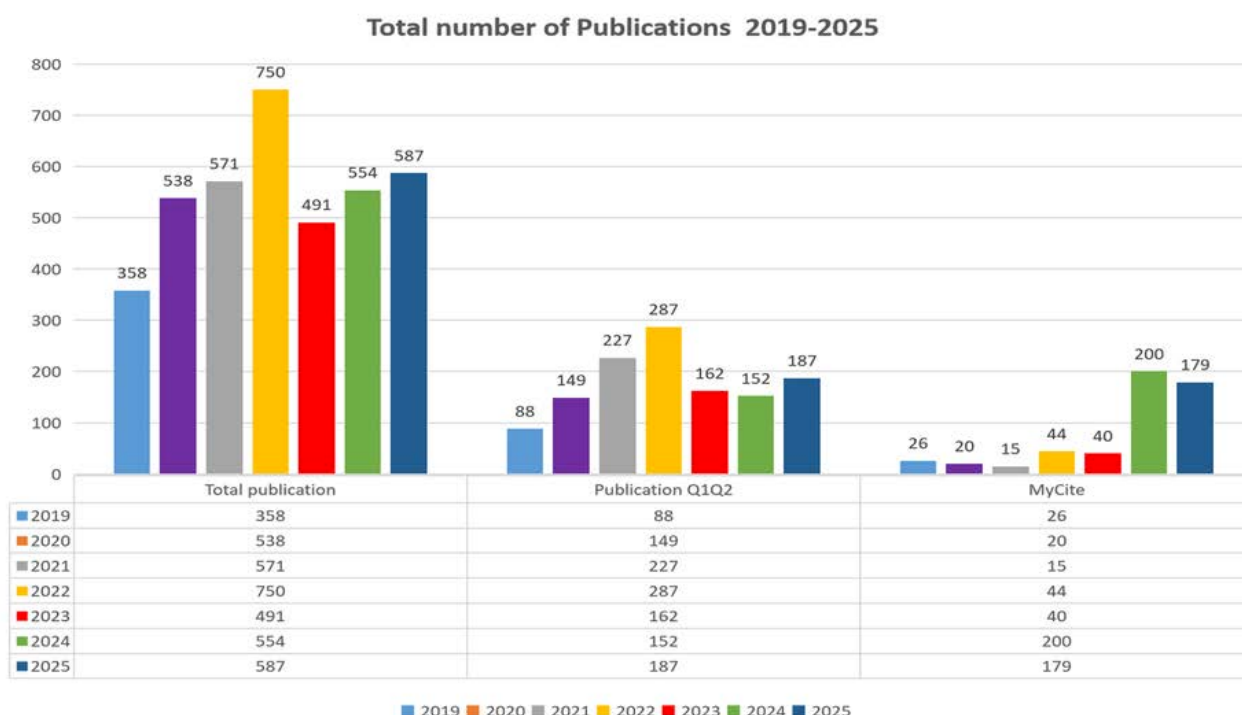
KPI & MyRA



Key Performance Indicator (KPI) 2025 School of Medical Sciences Performance Overview (2019–2025)

Research Publication Performance

In 2025, the institution recorded a total of 587 publications, representing an increase from 554 publications in 2024. Out of these, 187 publications were indexed in Q1 and Q2 journals, reflecting the continued emphasis on producing high-quality and impactful research outputs. In addition, 179 publications were indexed in MyCite, indicating strong national research visibility and contribution to local scholarly development.

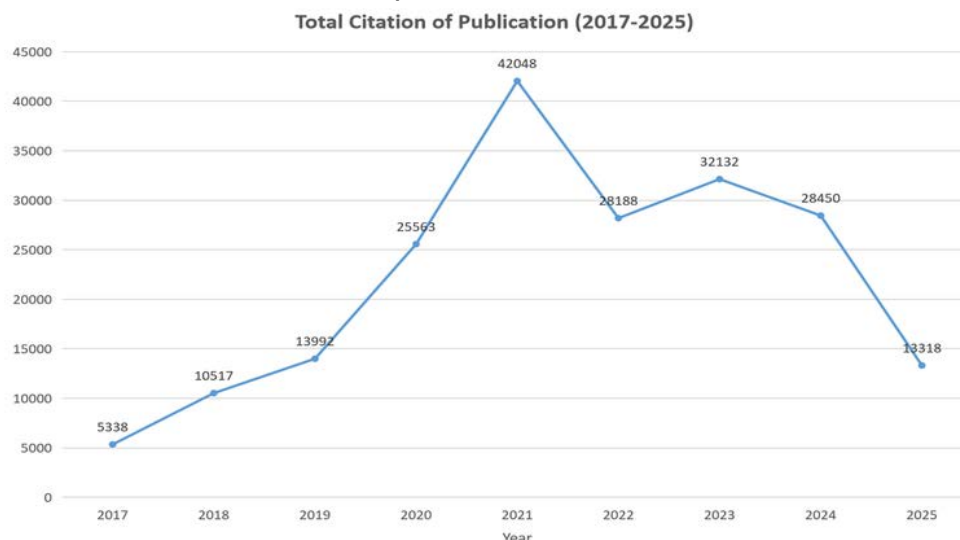


The publication trend from 2019 to 2025 demonstrates consistent research productivity, with significant growth compared to the pre-pandemic period. The institution successfully maintained strong publication momentum despite global and local research challenges.

KPI & MyRA

Citation Impact

The institution achieved a total of **13,318** citations in 2025, contributing to the cumulative research impact generated between 2017 and 2025. This reflects the relevance, visibility, and influence of the institution's research outputs within the academic and scientific community.

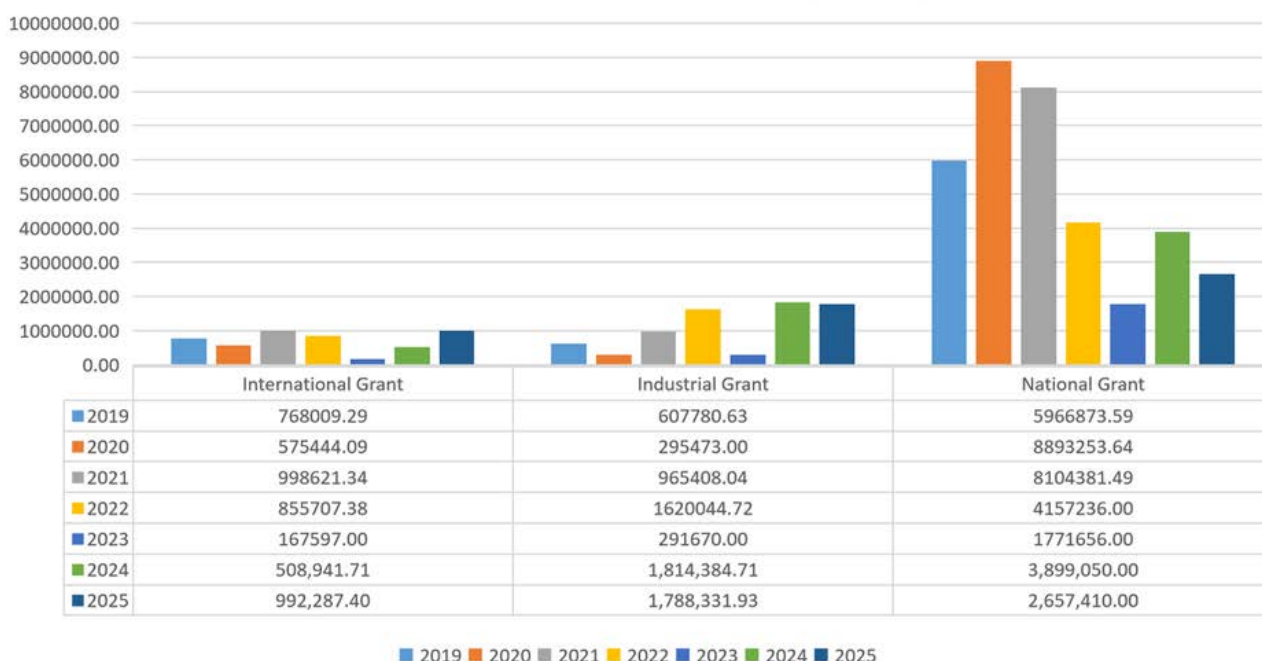


The sustained citation performance indicates that publications produced by researchers continue to be referenced and utilized by scholars worldwide, strengthening the institution's academic reputation and global research presence.

Research Grants and Funding

The strong industrial grant performance reflects increasing collaboration between academia and industry partners, highlighting the institution's ability to conduct research with practical applications and commercial relevance. The institution also continued to benefit from internal funding support, with university grants (**RM 1,856,601.50 for the year 2025**) contributing to research sustainability and capacity building.

Total Amount of Grants Received for Active Project (RM) 2019-2025

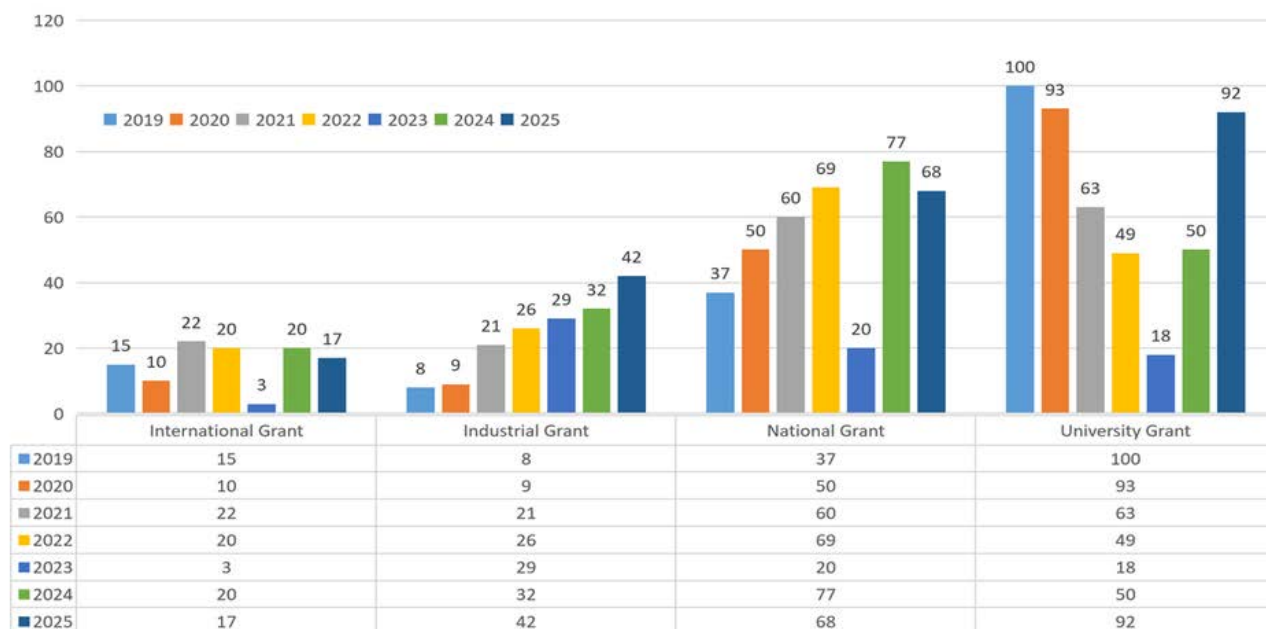


KPI & MyRA

Academic Staff Involvement in Research

A substantial number of academic staff were actively involved as Principal Investigators (PI) in research grants during 2025. This demonstrates strong research engagement among academic staff and reflects a healthy research ecosystem that encourages participation in both national and international collaborations. The high involvement in university and national grants further indicates continuous development of research leadership and institutional research capacity.

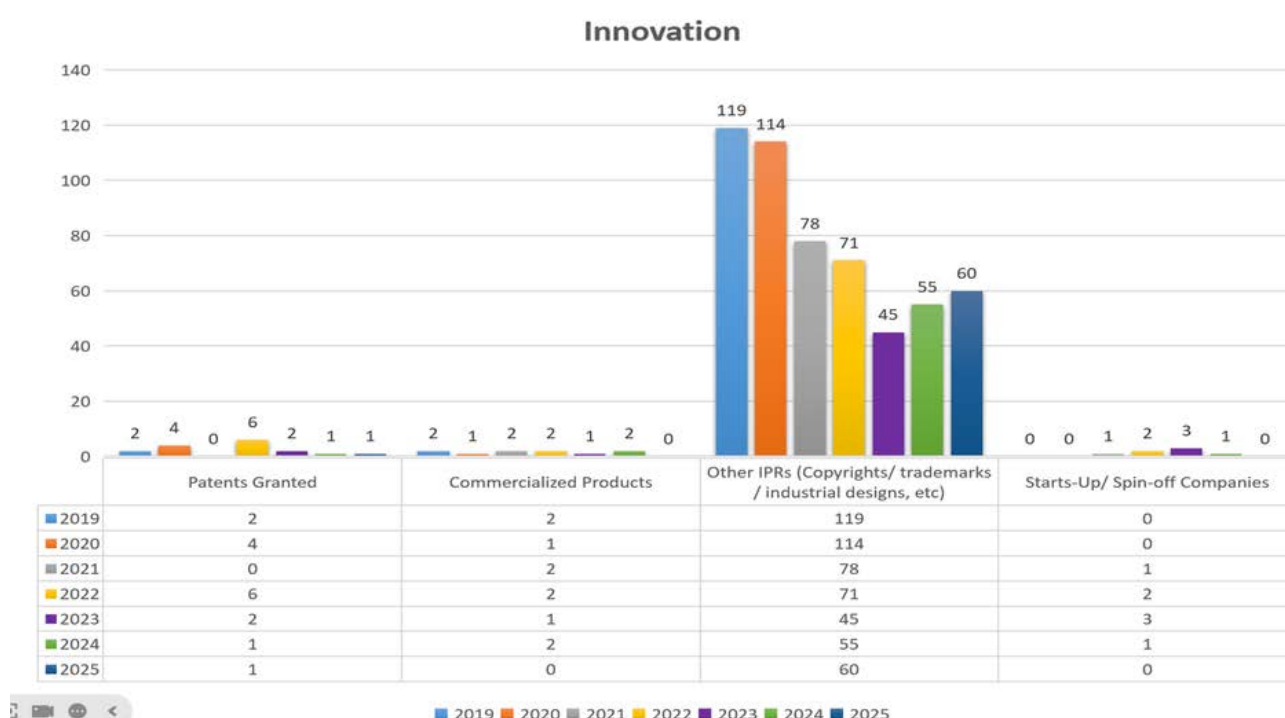
Total Number of Academic Staff involved as Principal Investigator of Research Grants



KPI & MyRA

Innovation and Intellectual Property

Innovation activities in 2025. Although the number of commercialized products and spin-off companies was limited in 2025, the institution maintained strong intellectual property output through copyrights, trademarks, and other registered innovations. These achievements demonstrate the institution's continued commitment toward knowledge generation, innovation protection, and research translation.



Conclusion

Overall, the 2025 KPI performance reflects the institution's continued commitment to research excellence, academic impact and innovation development. Growth in publication output, sustained citation performance, strong grant acquisition, and active staff participation indicate a resilient and productive research environment.

The increasing engagement with industrial collaborators and the consistent generation of intellectual property further strengthen the institution's role in advancing knowledge, supporting innovation, and contributing to national and global research agendas.

Special Thanks

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Thank You

2025 ANNUAL REPORT

SCHOOL OF MEDICAL SCIENCES

Research & Innovation Division
Central Research Laboratory
USM-Cochrane Network
KPI & MyRA

*"It does not matter how slowly you go
as long as you do not stop"*

