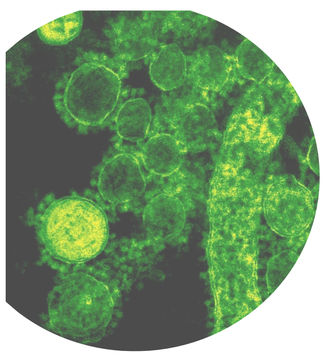
Mahidol University
Faculty of Medicine
Ramathibodi Hospital

PRECLINIC, CHAKRI NARUEBODINDRA MEDICAL INSTITUTE (CNMI)

Research area I Therapeutics Discovery



- **Focusing on**
  1) Target identification and validation
  2) Identifying potential drug candidates for unmet medical needs from Thai natural resources and collections of small molecules using both high-throughput screening and computer-aided drug screening and optimization
  3) Evaluating efficacy testing of prototypes of pharmaceutical products in human models
- **Diseases of interest** are related to aging, including diabetic nephropathy, neurodegenerative disorders, gastrointestinal disorders and obstructive & PM2.5-related lung diseases

- **Current therapeutic targets** include AMPK, TGF-**β**, nutrient and gut metabolite-sensing receptors, transporters and ion channels (CFTR and TMEM16A)
- **Experimental models** includes *in silico* modelling, 2D & 3D cultures (organoids, enteroids, co-cultures) and animals.
- **Techniques**: molecular biology, electrophysiology, high-throughput screening, high-content/phenotypic analysis, advanced bioimaging (live cell imaging, FRET and super-resolution)

Contact person

Prof. Chatchai Muanprasat, M.D., Ph.D.
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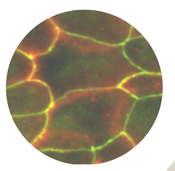
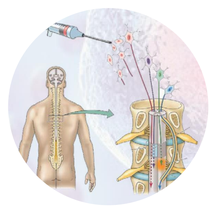


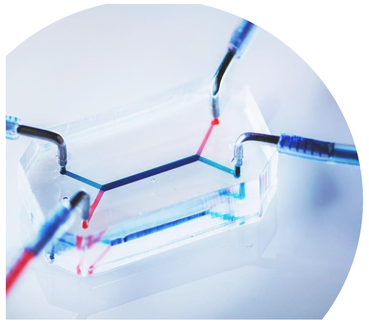
Research area II Novel 3D *in vitro* Organ Models and Regenerative Medicine

Contact person

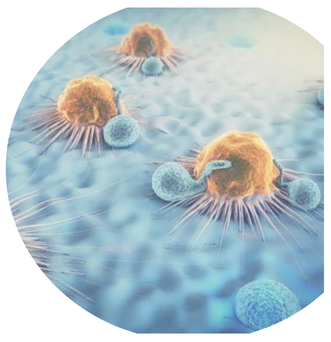
Pimonrat Ketsawatsomkron, Ph.D.
pimonrat.ket@mahidol.edu

- **Focusing on**
  1) Establishing 3D organ models using microfluidic devices (an-organ-on-a-chip) aimed to build capabilities of new drug testing platform
  2) Exploring the mechanistic basis of aging and regenerative medicine and identifying meaningful therapeutic targets against age-related diseases
- **Experimental models** includes multidisciplinary approaches from mesenchymal stem cells, 2D, 3D *in-vitro* models to whole animal studies.
- **Techniques:** microfluidic device and single-cell techniques





Research area III Medical Microbiology and Immunology



Contact person

Pisut Pongchaikul, M.D., Ph.D.
Pisut.pon@mahidol.edu

- **Focusing on**

  Our group aim at unveiling mechanism of antibiotic resistance and pathogenesis of bacteria using genomic, transcriptomic approach, and immune response (under the collaboration with Assoc Prof Dr Ponpan Matangkasombut Choopong). We are interested in searching for the association between microbiome diversity in various diseases.
- **We use** genomic and transcriptomic as well as conventional test to elucidate drug resistance mechanism in MDR pathogens

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Translational Research in Pharmacology and Toxicology

Research area IV

Contact person

Assoc.Prof. Phisit Khemawoot, Ph.D.
Phisit.khe@mahidol.ac.th

- **Focusing on**

  1) Pharmacokinetic, pharmacodynamic, metabolomic and toxicological studies of herbal products and small molecules

  2) Platelet and roles of NO in diseases e.g. thalassemia, pulmonary hypertension, asthma, and cadmium poisoning.

- **Mechanistic studies using** cell cultures, nitric oxide analyser, HPLC, aggregometer, flow cytometry, western blot, and ELISA.

- **Major techniques** are based on analytical equipment, e.g., HPLC, LCMS

Neurodegenerative Disease and Neuroregeneration

Research area IV

Contact person

Assoc. Prof. Permphan Dharmasaroja, M.D., Ph.D.
permphan.dha@mahidol.ac.th

- **Research Interest**

  - Roles and expression of translation factor eEF1A2 in neurological diseases: PD, AD, MND, epilepsy, and intellectual disability

  - Prognostic and predictive roles of translation factor eEF1A2 in cancers, including CML

  - Potential therapeutic roles of metformin and α-mangostin in neurological diseases: PD and AD

  - Neuroregeneration by human dental pulp stem cells

- **Current projects**

  - Roles of eEF1A2 in the pathogenesis of PD and neuronal cell differentiation

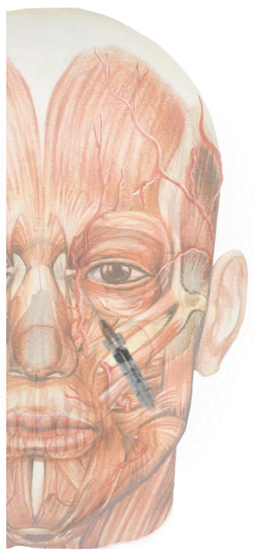
  - Potential therapeutic roles of metformin and alpha-mangostin in a human PD cell model

  - Moringa leaf powder extract for prevention of neuronal death in a human AD cell model

  - Mitochondrial transfer from hDPSC for neurodegenerative disease treatment

Clinical Anatomy

Research area VI



Contact person

Benrita Jitaree, Ph.D.
Benrita.jit@mahidol.ac.th

- **Research Interest**

1) Anatomical structures related aesthetic (filler and botulinum toxin injections)
2) Surgical anatomy in soft cadavers
3) Anatomical structure related plastic and reconstructive surgery
4) Clinical anatomy

- **Current projects**

1) Anatomical study of the midface: implication for filler injection in the midface region
2) Cadaveric investigation of the vessels and critical temporal structures related temporal fascial layers: Implication for safe and effective temporal filler injection