RESEARCH FELLOW 公募

国立循環器病研究センター研究所　各部紹介

部・室名	循環動態制御部
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研究内容

循環動態制御部では、循環の仕組みをシンプルに数理モデル化することで理解し、その知見を活かした最適な循環制御方法を模索しています。また、医療機器開発を最重要課題とし、多くの企業と共同研究・開発を実施しています。

1. 循環の仕組みを知る

循環の仕組みを知る手段として、シンプルな数理モデルを用いた循環の理解や病態の解明に取り組んでいます。そのために、圧容積関係（Pressure-volume loop: PV loop）や循環平衡理論、自律神経解析などを駆使し、正常と病態の循環制御的違いを同定しています。

2. シミュレーションで医療のミライを拓く

循環器系の数理モデル化により、コンピュータ上に任意の循環をシミュレーションすることが可能になります。将来的には、仮想治療や治療効果予測による診療支援、自動治療への発展、医療機器の In-silico 検証など幅広い用途で医療に貢献するツールに成長させたいと考えています。

3. 循環を操り、治療に生かす

培った循環に関わる器官の機能や循環調節に関する研究結果を基に循環を最適にコントロールする手法を開発することで病気の克服を目指しています。具体的には、薬物や機械で循環の制御機構を再建する研究・開発を行っています。

直近 3 年間の業績

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その他　情報

総合内科専門医、循環器専門医、麻酔科専門医、心臓外科専門医、集中治療専門医が所属しており、臨床に直結する研究や開発を実施しています。

- 循環動態の臨床教育を目的とした循環動態アカデミーという活動をしています：https://circ-dynamics.jp/
- 迷走神経刺激カテーテルの開発と実用化を目指しています：http://www.circucon.jp/ivns.html
- NTT Research 社とともに心血管バイオデジタルツインの構築を目指した共同研究をしています：https://www.ncvc.go.jp/res/divisions/cv-biodt/
- 国循発ベンチャーを創業し、AI による医療連携の円滑化に関する試みをしています：https://cubec.jp/
- 心原性ショックレジストリー UNLOADERS 研究を推進しています： https://sk-kumamoto.jp/unloaders/