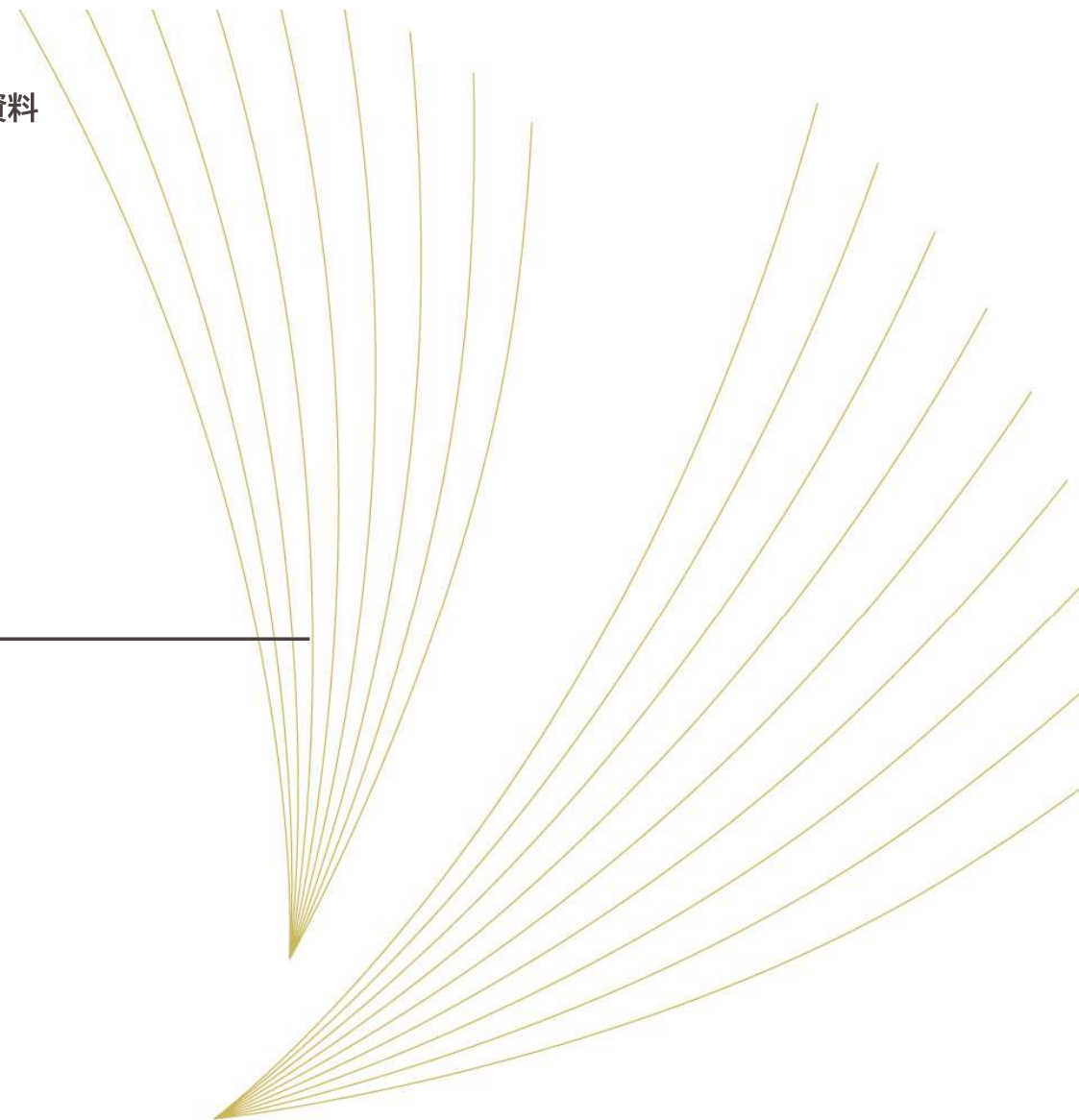


BIO JAPAN 2026

パートナーリング用技術紹介

Technology Brief for partnering

開放型胆管腔肝細胞モデルによる胆汁中排泄評価
Open-form Bile Canaliculus Model for
Biliary Excretion Assessment



技術説明



タイトル

開放型胆管腔を形成する肝細胞モデルによる胆汁中排泄評価

概要

クローデインを被覆した透過膜上で肝細胞を培養し、膜表面に開放した胆管腔を誘導する。血管側から添加した薬物と代謝物を胆汁側チャンバーから経時回収し、取り込み・代謝・胆汁排泄を透過試験として定量評価できる。

解決する課題

従来のサンドイッチ培養では胆管腔が閉鎖し、排泄成分の直接・連続測定が困難

技術の特徴(3点)

- 1.クローデイン被覆透過膜上に開放型胆管腔を形成
- 2.胆汁側チャンバーから親薬物・代謝物を経時的に直接回収
- 3.7薬物・2ドナーでヒトin vivo胆汁排泄との高い相関を実証

技術成熟度

試作段階

知財状況

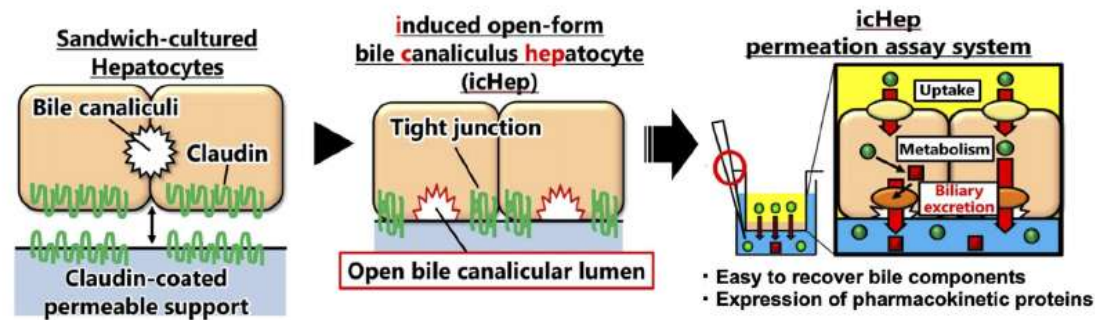
特許7676009号、PCT/JP2025/032389

想定連携先 (連携スキーム)

製薬・CRO・培養器材企業とのライセンス／共同開発
多検体化・自動化、標準化、追加化合物での予測性能検証

開放型胆管腔を形成し、胆汁側へ排出された成分を直接回収

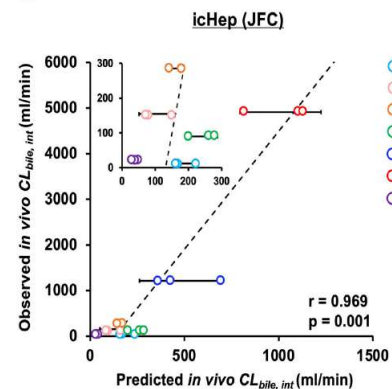
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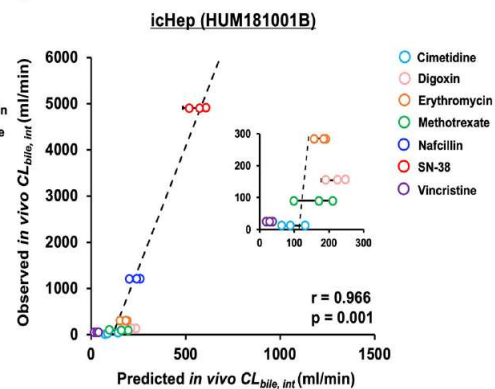
- ・クローディング被覆透過膜上で開放型胆管腔を誘導
- ・親薬物と代謝物を経時的に回収
- ・取り込み・代謝・胆汁排泄を一体評価
- ・薬物誘発性胆汁うっ滞の評価にも適用

ヒトin vivo胆汁排泄クリアランスを高精度に予測

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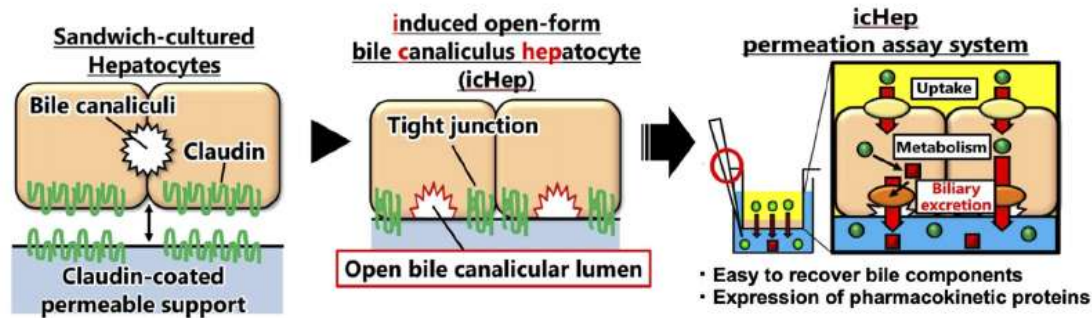
Technology Brief



Title	Biliary Excretion Assessment Using a Hepatocyte Model with Open Bile Canaliculi
Overview	Hepatocytes cultured on a claudin-coated permeable membrane form open bile canaliculi at the membrane surface. Drugs added to the sinusoidal side, together with their metabolites, can be collected over time from the bile-side chamber, enabling quantitative permeation-based assessment of uptake, metabolism, and biliary excretion.
Problem	In conventional sandwich cultures, closed bile canaliculi make direct, continuous measurement of excreted compounds difficult.
Key Features (3)	1.Open bile canaliculi formed on claudin-coated permeable supports 2.Time-resolved direct recovery of parent drugs and metabolites from the bile-side chamber 3.High correlation with human in vivo biliary clearance across 7 drugs and 2 donors
Development	Prototype stage
IP Status	Japanese Patent No. 7,676,009; PCT/JP2025/032389
Potential Partners & Collaboration	Licensing/co-development with pharma, CROs, and cultureware companies High-throughput automation, standardization, and validation with additional compounds

Open bile canaliculi enable direct recovery of compounds excreted to the bile side

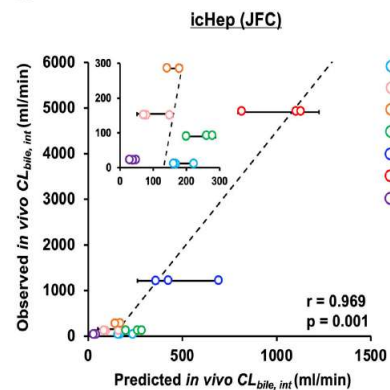
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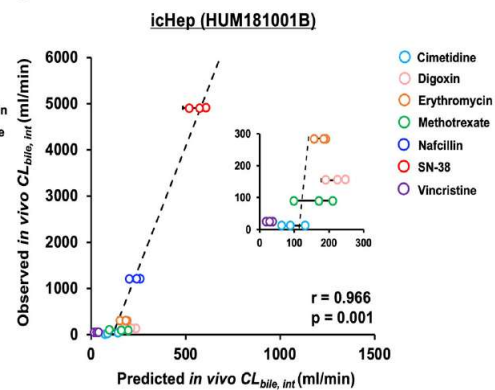
- Open bile canaliculi induced on claudin-coated permeable supports
- Time-resolved recovery of parent drugs and metabolites
- Integrated assessment of uptake, metabolism, and biliary excretion
- Applicable to the assessment of drug-induced cholestasis

Accurate prediction of human in vivo biliary excretion clearance

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Thank you for your interest.

Contact

Kanazawa University

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