Interreg North-West Europe
Co-funded by the European Union
STEP4NAMs

APPLY

Challenge-based SME support

#11 A predictive model of blood–brain barrier permeability with translational relevance to humans

EXPECTED DELIVERABLE

Indicative duration: 6 – 9 months

Developing predictive in vitro models of the human blood–brain barrier (hBBB) is crucial for improving CNS drug discovery and safety evaluation. We would like a medium-throughput platform combining Transwell, co culture, and organ on chip formats to recreate a physiologically relevant hBBB. The model would be characterized using key functional metrics, including transendothelial electrical resistance (TEER) to assess barrier tightness and the activity of efflux transporters P glycoprotein (P gp) and breast cancer resistance protein (BCRP), for instance. This system enables quantitative permeability measurements to support prediction of human BBB penetration. Configurations incorporating or excluding neuronal co culture broaden its application to neurotoxicity assessment, complementing transport studies. Additionally, the platform would allow controlled comparison of healthy and impaired BBB states, enabling quantification of permeability changes and establishment of ratios reflecting barrier dysfunction. Overall, this versatile and physiologically relevant hBBB model would provide a robust tool for evaluating compound permeability, screening neurotoxicants, and investigating mechanisms underlying BBB disruption.

Relevant Expertise:

- BBB expertise;
- Proficiency in at least one of the following technologies: organ on chip systems +/- TEER measurements, Transwell and co culture models.

LONG-TERM COLLABORATION POTENTIAL

Subject to scientific and strategic alignment

We would be interested in establishing a sustained collaborative partnership for our future projects in order to mitigate the potential risks associated with neurotoxic effects.

CANDIDATE SELECTION

Initial eligibility check by MPR. Final selection by the challenge provider.

Completion of EDUCATE	Core Module
Company status	SME under EU criteria
Maximum number of supported companies	As many as need
Confidentiality NDA/ CDA required	Yes

Selection by the challenge provider based on fit, relevance, readiness and innovation potential.

Additional selection criteria

Geographic area	SME from across EU are welcome. SMEs from Interreg NEW are prioritized, particularly partner regions

APPLICATION

Application directly via the STEP4NAMs Moodle platform

https://step4nams.moodlecloud.com/

Scan the QR code to learn more about the STEP4NAMs training programme

SUPPORT

step4nams@bioregio-stern.de

Step4nams.nweurope.eu