Caco-2 Permeability

Assessing intestinal epithelial transport and oral absorption potential

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Biotech GmbH

Dear Client,

first and foremost, thanks for downloading this free resource. All graphics in this report are predictions made by our AI systems. They show the profile of this ADMET endpoint for thousands of marketed drugs. We divided it by indication, and as you can see, it changes a lot from one category to another. Therefore, try to find the closest indication to the compounds you are currently developing.

Caco-2 permeability describes how readily a compound crosses a cell layer that models the human intestinal epithelium. In plain terms, the assay asks whether a dissolved drug molecule can move from the intestinal side of a barrier toward the bloodstream. Adequate permeability supports oral absorption. However, high permeability does not guarantee high oral exposure because dissolution, intestinal metabolism, transporters, and hepatic first-pass elimination also affect bioavailability.

Researchers grow Caco-2 cells on porous membrane inserts until the cells form a polarized monolayer with tight junctions. Caco-2 cells originate from a human colorectal adenocarcinoma, but differentiated cultures develop several structural and transport characteristics of intestinal enterocytes. The test compound is added to the apical compartment, which represents the intestinal lumen. Samples are collected from the basolateral receiver compartment over time and quantified, commonly by liquid chromatography–tandem mass spectrometry.

The result is usually reported as the **apparent permeability coefficient**, or **Papp**, in centimetres per second, often expressed as $\times 10^{-6}$ cm/s. Papp is calculated from the rate at which compound appears in the receiver compartment, divided by the monolayer surface area and the starting donor concentration. **Higher Papp indicates faster transport across that specific experimental system. Low Papp indicates restricted epithelial passage and increases the risk of incomplete intestinal absorption.**

Importantly, this model lacks the full intestinal architecture, mucus environment, blood flow, microbiome, and normal expression of several transporters and metabolic enzymes. Caco-2 permeability must therefore be interpreted with aqueous solubility, dissolution rate, lipophilicity, ionization, transporter substrate status, intestinal metabolism, and human intestinal absorption data.

We generated these insights using advanced AI systems designed to analyze complex biotech data and highlight potential trends. While we strive for accuracy, AI models can occasionally make mistakes or miss context, so please treat these predictions as informative guidelines rather than absolute facts.

This report is provided for general informational and educational purposes only, not for medical diagnosis, treatment decisions, or financial advice. Because individual circumstances and data can vary, we cannot be held responsible for any decisions made or losses incurred based on these predictions.

Now that we got this out of the way, we genuinely hope these results are useful for your research.

Sincerely,

Your friends at Nezu Biotech GmbH.

You have the vision. We can help make it reality.

Click here to book a demo. Tell us about your molecules.

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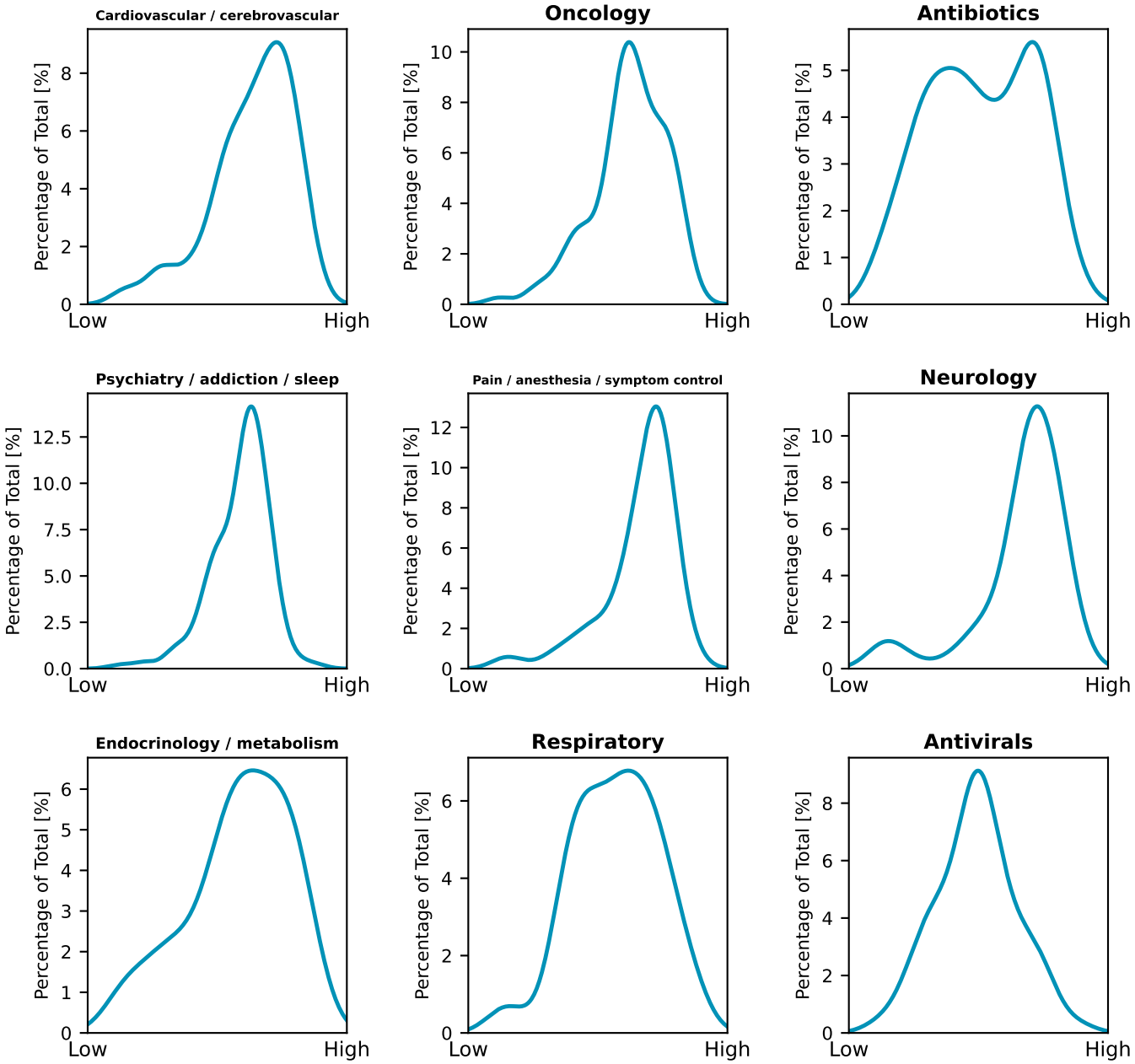

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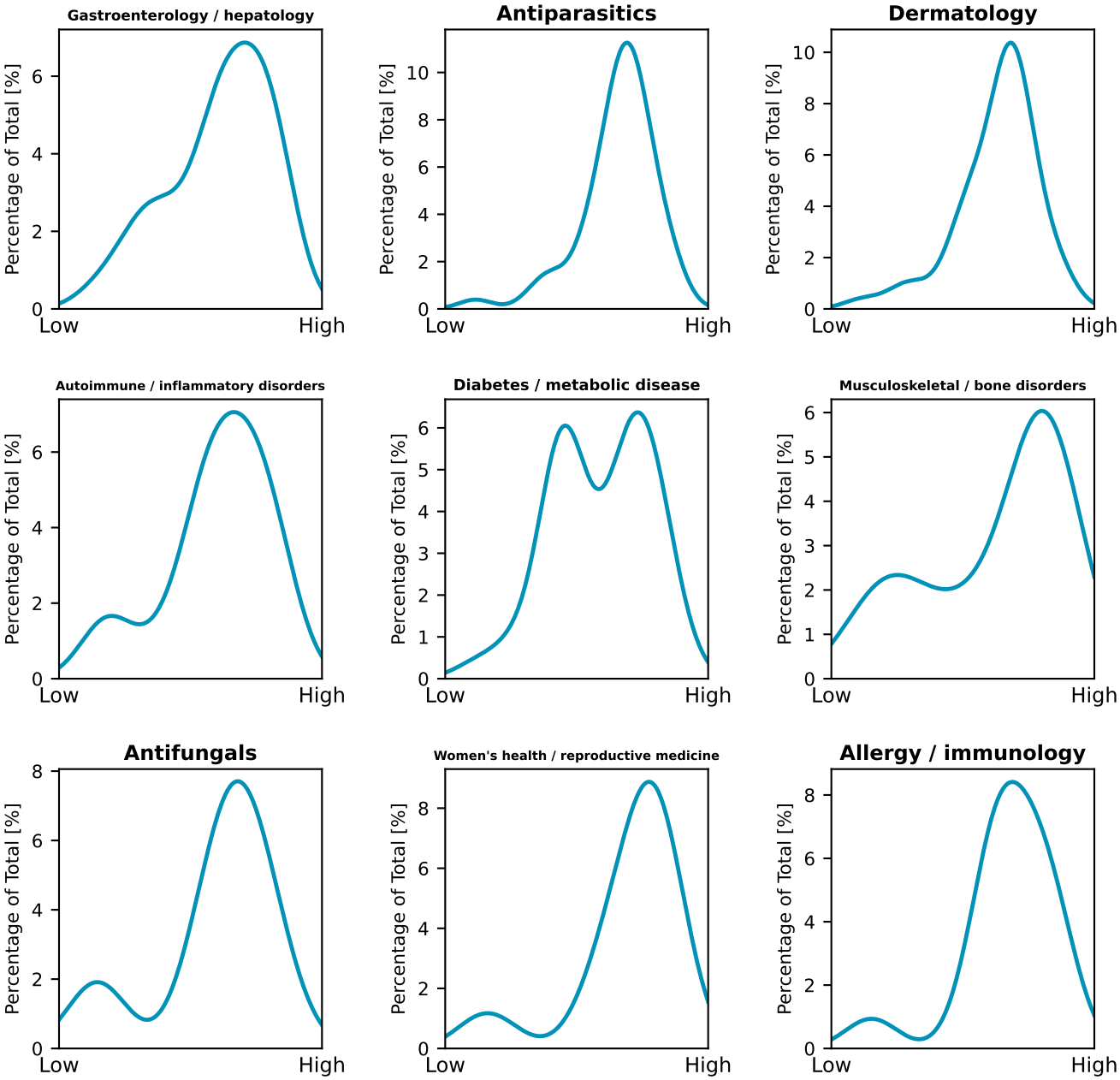

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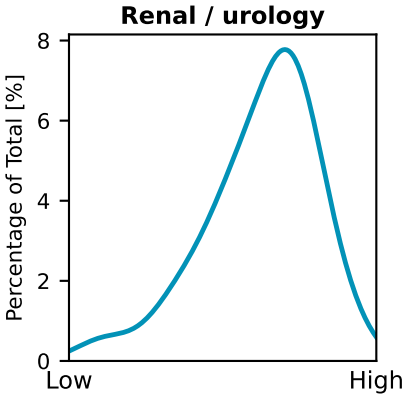

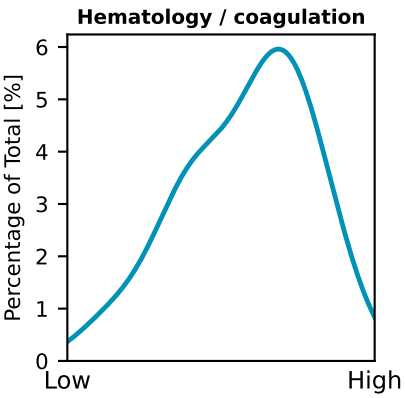

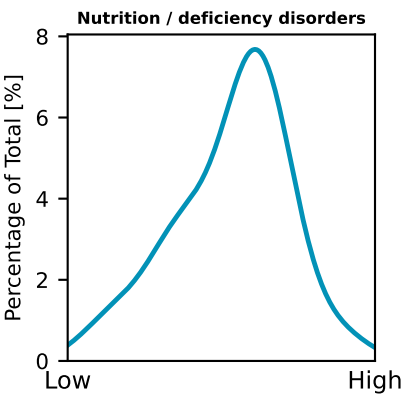

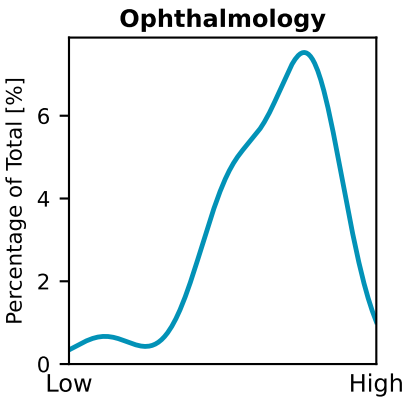

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