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Drug transporters, integral components of cell membranes, stand as critical determinants in the complex interplay of pharmacokinetics, in uencing the absorption, distribution, and elimination of drugs. As gatekeepers governing the movement of therapeutic agents across biological barriers, drug transporters play an indispensable role in shaping the e ectiveness and safety of pharmacotherapy. is introduction provides a glimpse into the pivotal signi cance of drug transporters, outlining their diverse functions and impact on personalized medicine in the realm of pharmacotherapy.

D

Drug transporters serve as cellular gatekeepers, regulating the entry and exit of drugs across biological membranes. ese integral membrane proteins, classi ed into families such as ATP-Binding Cassette (ABC) transporters and Solute Carrier (SLC) transporters, are strategically positioned in various tissues, including the gastrointestinal tract, liver, kidney, and blood-brain barrier [1,2].

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e impact of drug transporters on pharmacokinetics is multifaceted. ey in uence drug absorption by facilitating or impeding the movement of substances from the external environment into the bloodstream. Within tissues, these transporters play a crucial role in drug distribution, ensuring that therapeutic agents reach their intended target sites. Additionally, drug transporters contribute signi cantly to drug elimination processes, guiding the excretion of drugs and their metabolites [2,3].

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Genetic polymorphisms in drug transporter genes contribute to interindividual variability in drug response. Variations in transporter expression and activity can in uence drug e cacy, alter therapeutic

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