Special Issue

New Drug Delivery across the Blood–Brain Barrier

Message from the Guest Editor

Drug delivery into the central nervous system (CNS) is modulated by blood–brain interfaces. The blood–brain barrier (BBB), the blood–cerebrospinal fluid barrier (BCSFB), and the blood–arachnoid barrier (BAB) are key interfaces regulating the exchange of substances between the blood, the CSF, and the brain parenchyma. Drug delivery to the CNS can thus be limited due to unfavorable physicochemical properties, efficient active brain to blood carrier-mediated efflux, and/or poor active blood to brain carrier-mediated influx. Several strategies are currently developed to increase CNS drug delivery of small and large molecular weight drugs, including direct administration into the brain parenchyma, methods disrupting BBB integrity, development of specific chemicals or antisense oligonucleotides inhibiting efflux transporter activity, rational drug design decreasing substrate recognition by efflux transporters and/or increasing transport by influx transporters or carrier-mediated transcytosis receptors, and development of nanomedicines and biologics from microbiological origin targeting the BBB and delivering drugs into the brain parenchyma.

Guest Editor

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