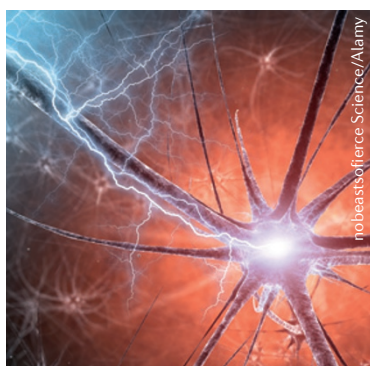


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The importance of co-developing companion diagnostics with targeted cancer therapies is becoming increasingly recognized. In July 2011, the US Food and Drug Administration released a draft guidance document, which introduced a drug–diagnostic co-development process for gaining regulatory approval. In a Perspective article this month, Scher and colleagues discuss issues that were not covered in depth in these guidelines and propose potential strategies to overcome the challenges faced in the future co-development of drugs and diagnostics. Meanwhile, two of our Reviews this month focus on central nervous system disorders. First, Löscher and colleagues discuss the need for more efficacious anti-epileptic drugs and the challenges currently hampering their discovery and development. They describe novel approaches for the development of improved epilepsy therapies, including new target-driven approaches, comparative preclinical proof-of-concept studies and innovative clinical trial designs, that could revitalize joint efforts between academia and the pharmaceutical industry. In the second Review, Ghosh and colleagues provide an overview of the current understanding of the pathophysiology of autism spectrum disorder (ASD), a neurodevelopmental condition that is characterized by persistent deficits in social interaction and communication. They focus on the most recent insights derived from the rapidly evolving genetics of ASD and their implications for target selection and drug development. Finally, Hoiby and colleagues review the physiology and pathology of chronic infections caused by bacteria that grow as aggregates in biofilms, and their mechanisms of resistance to antibiotic agents. Potential future therapeutic targets and strategies to combat biofilm infections — including prevention, weakening, disruption and direct killing approaches — are discussed.

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