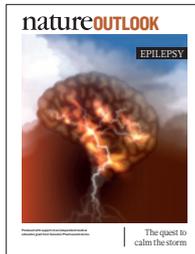


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EPILEPSY

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Epilepsy has been documented for thousands of years and can affect anyone at any age. There are at least a dozen types of epilepsy — the exact number depends on who is being asked — that can start in and spread to different brain regions, creating a range of seizure types. The World Health Organization conservatively estimates that 50 million people worldwide have epilepsy; yet, despite its prevalence, the condition attracts relatively little research funding (page S2).

Part of the reason for the dearth of treatments is the long history of social stigma and fear that once surrounded people with the condition (page S10). Perhaps the most complex piece of the epilepsy puzzle is the fact that we still don't understand the brain itself; simply knowing some of the roles of neurotransmitters and ion channels does not explain why some people develop epilepsy (page S4). Studies have helped us understand enough of epilepsy's neurobiology to use surgery as a treatment, which is why neurologist Samuel Wiebe proposes that this tool is used more widely (page S7).

Neuroscience and genetics have exposed crucial pieces of the epilepsy process, but studies have not determined the network of genes that drive seizures (page S8). Until recently even drug-makers tackled epilepsy by trial and error, but now researchers are using new targets and drug development strategies to help create more effective medicines (page S12). A high-fat, low-carbohydrate diet can help reduce seizure frequency in young children (page S14), and in the future, sensors that can be worn to predict an oncoming seizure could have clinical and research applications (page S16).

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Mike May
Contributing Editor

CONTENTS

S2 EPIDEMIOLOGY

The complexities of epilepsy
Charting a century of research

S4 NEUROBIOLOGY

Unrestrained excitement
Understanding the mechanisms behind seizures

S7 PERSPECTIVE

The surgical solution
Samuel Wiebe argues the case for surgery as an epilepsy treatment

S8 GENETICS

Complex expressions
Possible genes involved in epilepsy

S10 SOCIOLOGY

Shedding the shame
The social stigma of epilepsy

S12 DRUG DEVELOPMENT

Illuminated targets
The quest for new treatments

S14 FOOD SCIENCE

Fat chance
Inhibiting seizures with a high-fat diet

S16 TECHNOLOGY

Dressed to detect
Wearable epilepsy sensors could help to save lives

COLLECTION

S18 Mutations of *DEPDC5* cause autosomal dominant focal epilepsies
S. Ishida et al.

S22 GABA progenitors grafted into the adult epileptic brain control seizures and abnormal behavior
R. F. Hunt et al.

S28 Brain mitochondrial metabolic dysfunction and glutamate level reduction in the pilocarpine model of temporal lobe epilepsy in mice
O. B. Smeland et al.

S36 De novo mutations in epileptic encephalopathies
Epi4K Consortium & Epilepsy Phenome/Genome Project

S41 The pathology of magnetic-resonance-imaging-negative epilepsy
Z. I. Wang et al.

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