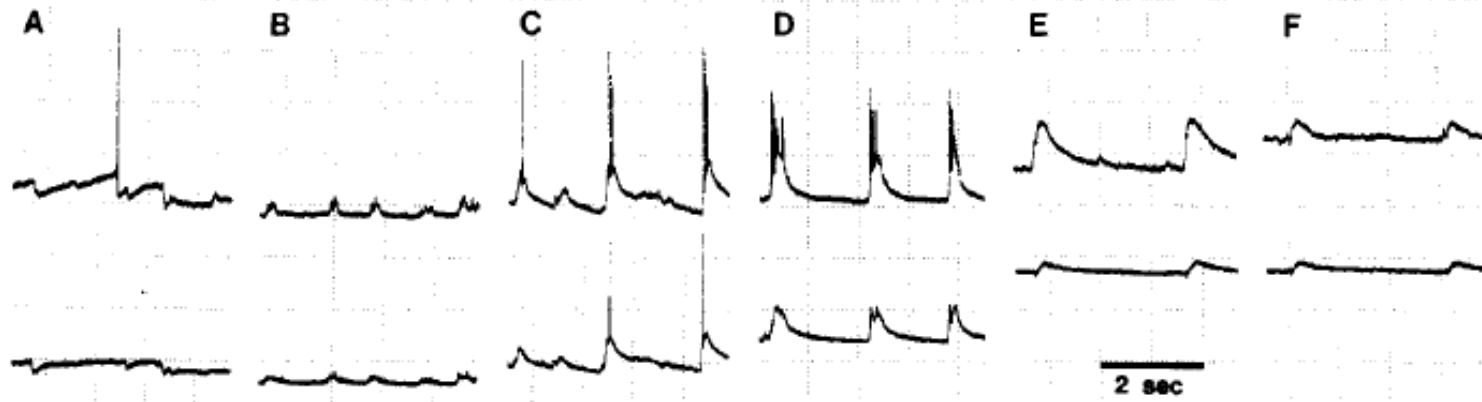
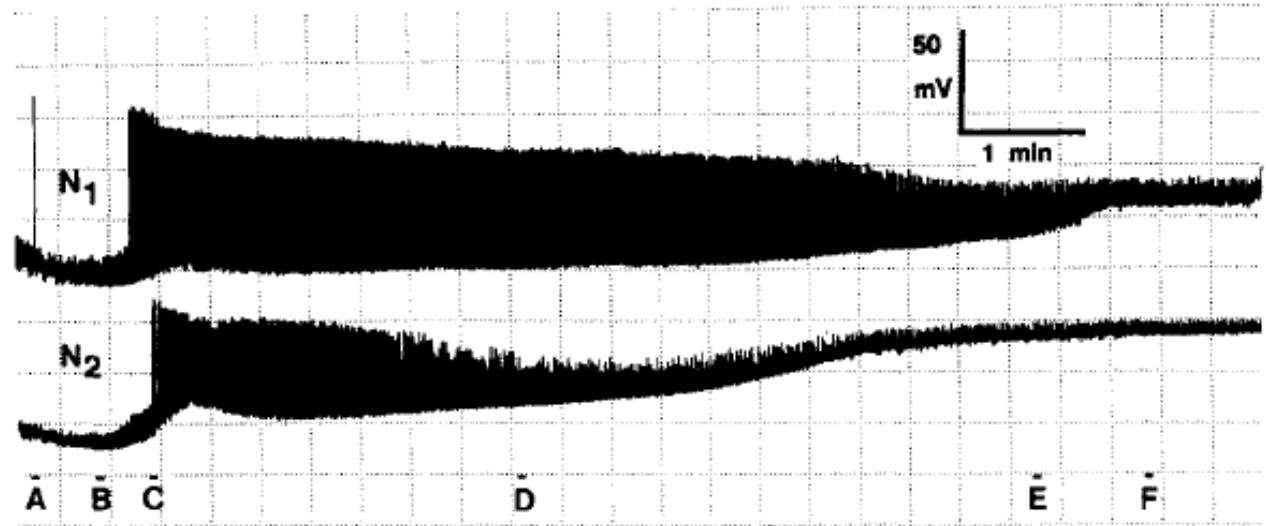


Seizure-like activity in cultured hippocampal neurons

■ Koroshetz and Furshpan Neurosci Res Suppl 13:S65-S74



Neuroscience



Epilepsy

Basic Neuroscience

basic processes about which information is pouring in.

neural migration, neural connectivity, neural plasticity,
neuronal function.

Clinical Science of Epilepsy

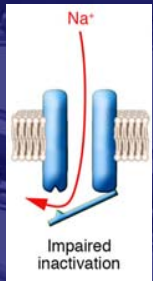
Wealth of clinical phenotypes about which information is
pouring in.

Endophenotypes

- enabled by technology, genetics, imaging, brain
recording



Upstream and Downstream Targets.



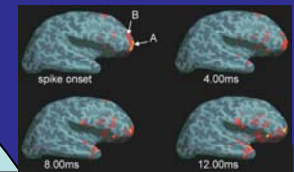
Response to injury →

Increased Excitability

← Neurogenesis

Synaptic strength

Seizure spread



Ion channels genes

LTP →

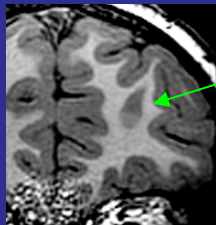
Homeostatic synaptic plasticity

Developmental genes

Seizure Disorders

comorbidities →

Disability & Handicap



Epiphany



The new idea that establishes important causal connection between two processes.

See something common in a very different light.

See something never seen before that informs an important question.

More often than not, a surprisingly simple idea.



Prevention of epileptogenicity.

Stroke and head trauma provide clinical syndromes amenable to study.

Parallels between neural recovery after injury and post injury epilepsy.

Post prolonged febrile seizure .

Chicken/egg question regarding hippocampal sclerosis in patients with epilepsy post FS.

Surgical resection of identified focus.

Rx. of Tuberous Sclerosis?

Cell based circuit inhibition



Prevent Seizure Spread

Brain stimulation

Feedback controlled response to “pre-seizure” brain activity.
Implantables, TMS

Drugs

AED screening program
Feedback controlled drug release



The Fertile Ground for Discovery

Look outside your field.

Molecular mechanisms frequently shared.

New technologies that might answer previously unanswered question.

Get good thinkers interested in epilepsy.

Talk/Work together- Consortia may be needed to answer important questions that require large numbers, or solution to various pieces. NIH/Private partnership.

Submit great grants!

Hit the benchmarks!



Thanks from the NINDS

The organizers, speakers, audience.

The Epilepsy Society of America

The Center United for Research in Epilepsy

Epilepsy Foundation

Finding a Cure for Epilepsy and Seizures

International League against Epilepsy

Milken Family Foundation

National Association of Epilepsy Centers

Parents Against Childhood Epilepsy, Inc

Tuberous Sclerosis Alliance

Patients with epilepsy.

Margaret Jacobs

The Taxpayer (ie. you in 16 days)

