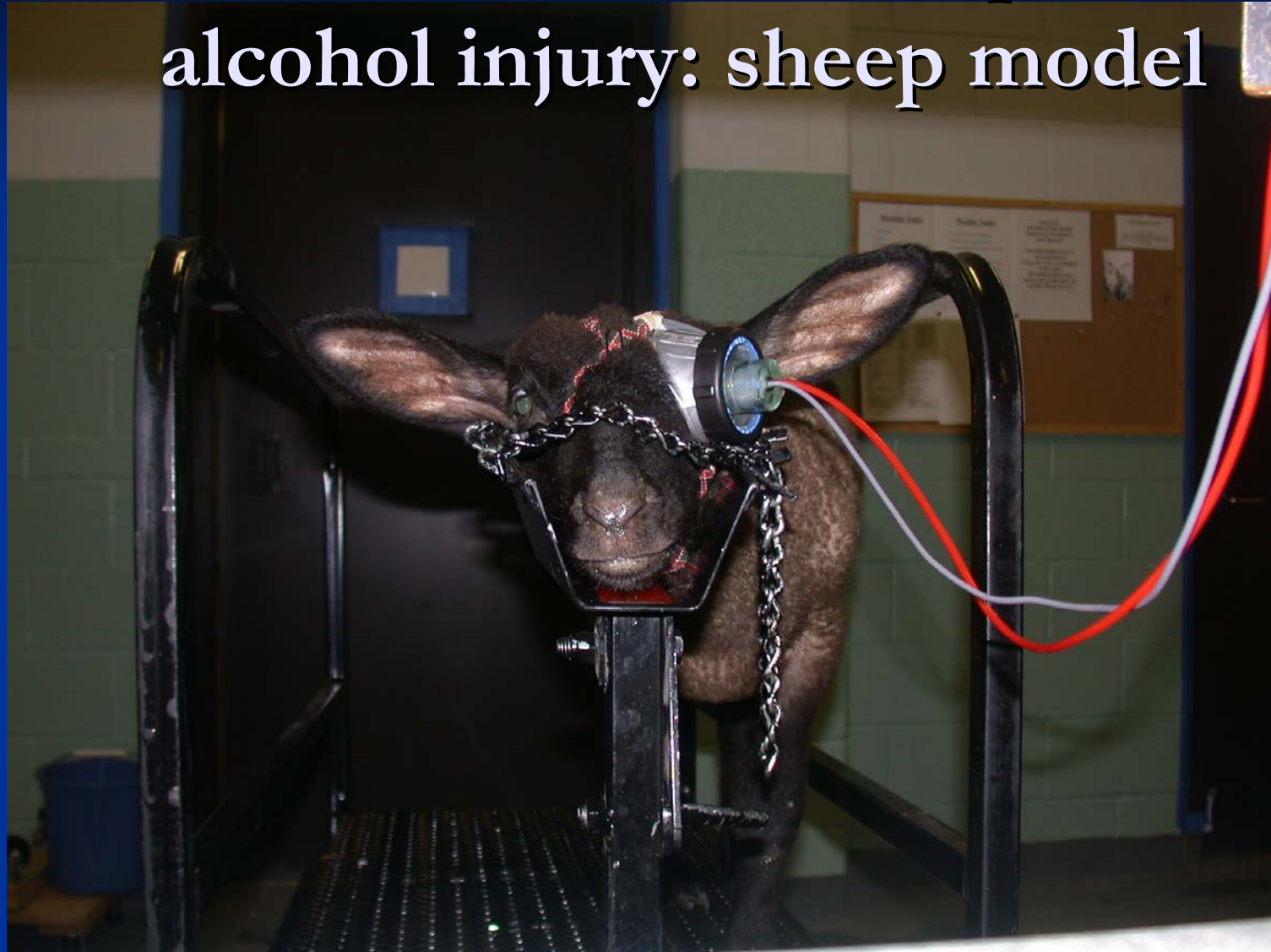


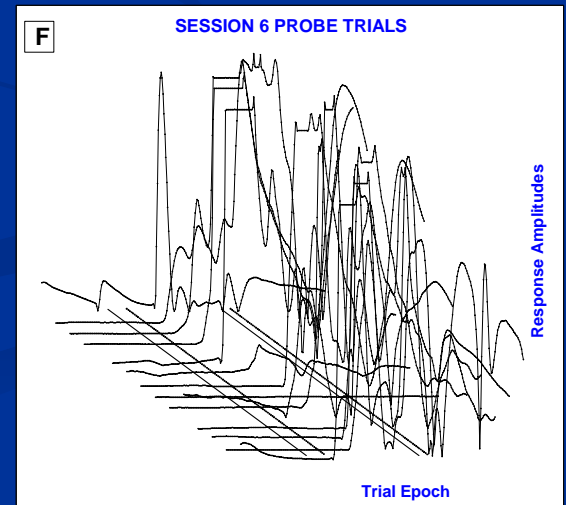
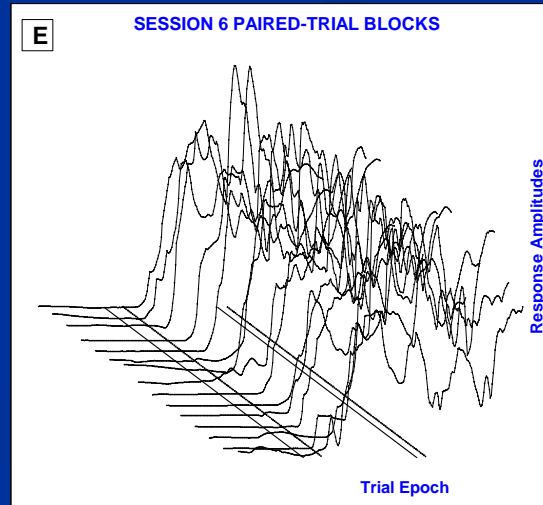
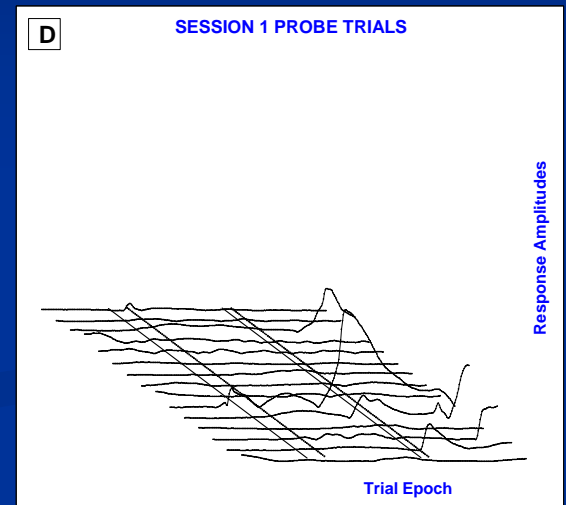
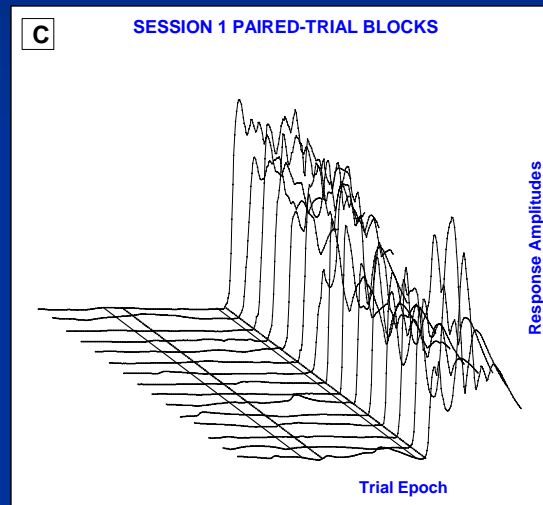
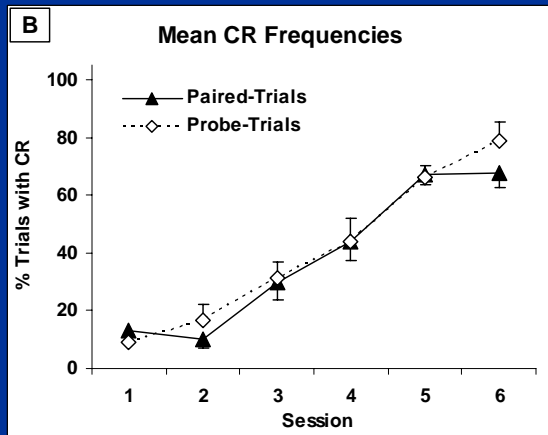
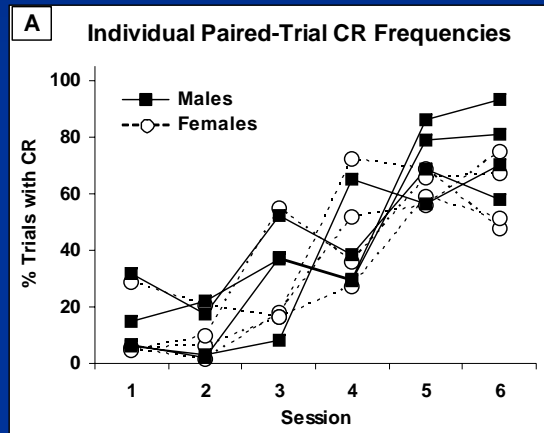
Translational studies of FASD using a sheep model

- Tim Cudd
- Charlie Goodlett
- Feng Zhou
- Mark Stanton

Functional measures of prenatal alcohol injury: sheep model



Three month old lambs acquire eyeblink conditioning

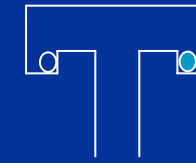
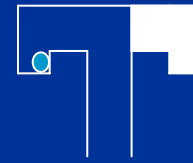




Habituation Phase 1:
Goal Box Training
5 Sessions,
2 Trials / Session
Always Reinforced



Habituation Phase 2:
Forced-Run Training
5 Sessions,
2 Trials / Session
Always Reinforced



Delayed Alternation Training:
1st Trial = Forced-Run
(random side)
2nd Trial = Choice
(opposite side)

Spatial delayed-alternation
learning tested in weanling
lambs (PD 60 – PD 83)
using a T-maze task





1.0T

Ex: 780

Sagittal 3D SPGR

Sc: 914

S_R

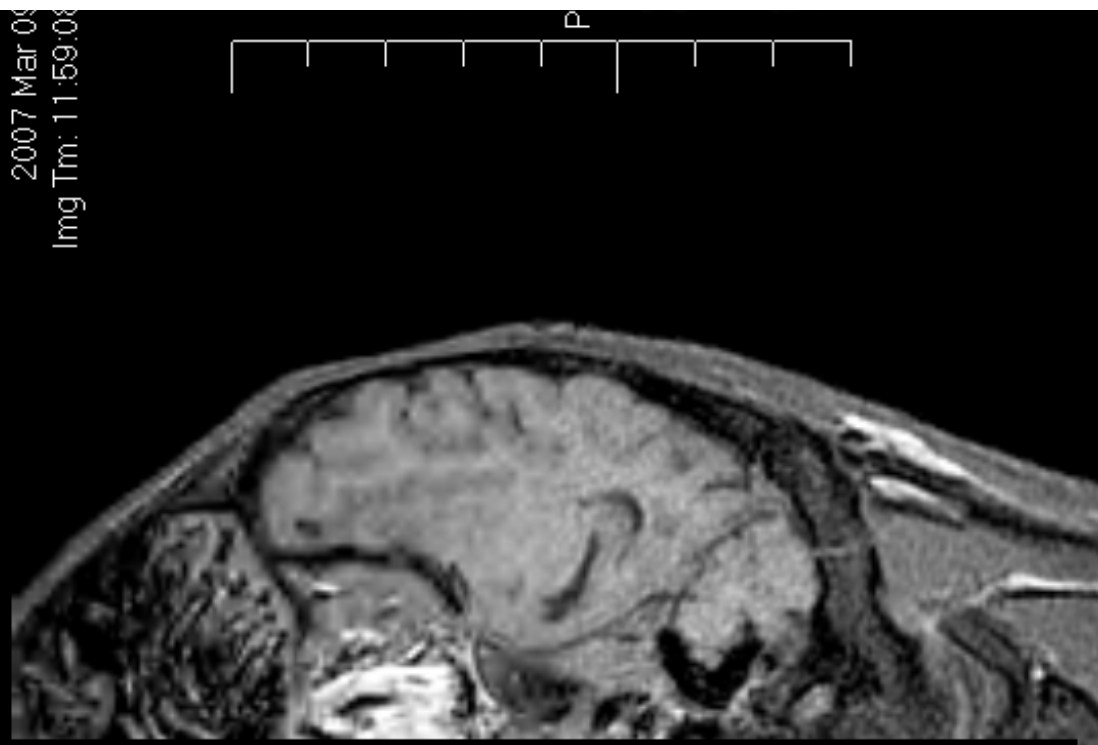
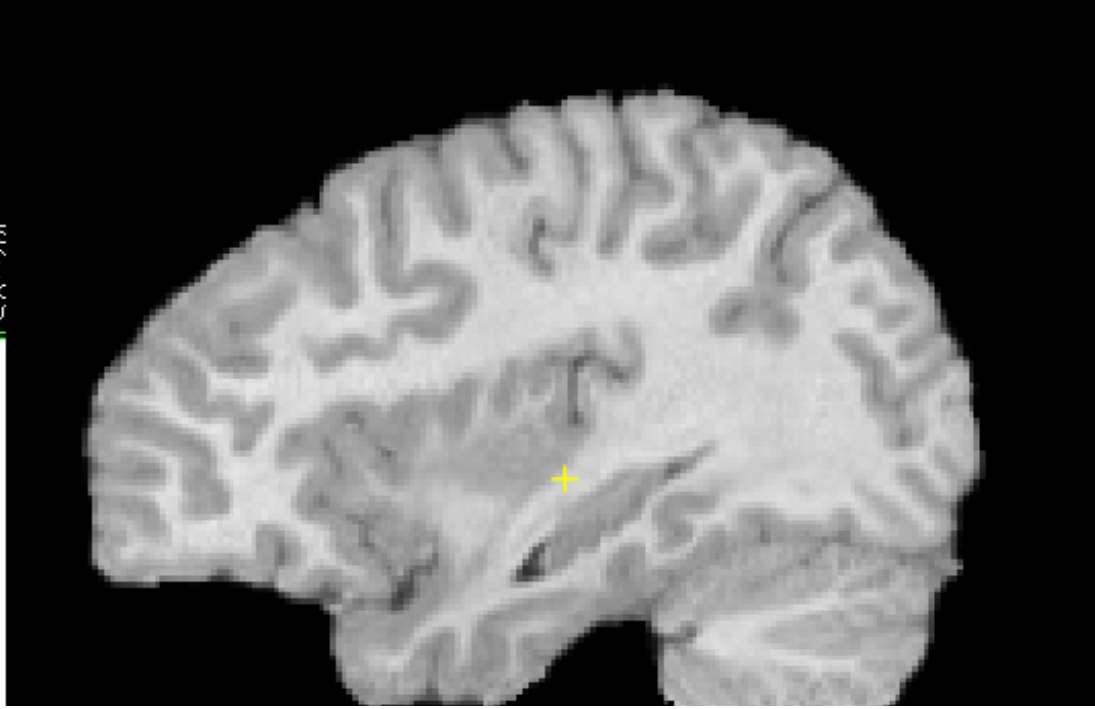
TXAM, Yellow 17

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Acc

2007 Mar 03

Img Tm: 11:59:08



TE: 8.7

QUADKNEE

1.0thk/0.0sp

Lin

W: 186 L: 120

I₁

IDFOV: 13.9 x 13.9cm

NOT TO SCALE

Effect of ethanol upon uterine activity and fetal acid-base state of the rhesus monkey

TERUSADA HORIGUCHI, M.D.

KOTARO SUZUKI, M.D.

ARSENIO C. COMAS-UR

EBERHARD MUELLER-H

ANN M. BOYER-MILIC,

ROBERT A. BARATZ, M.

HISAYO O. MORISHIMA

L. STANLEY JAMES, M.

KARLIS ADAMSONS, M.

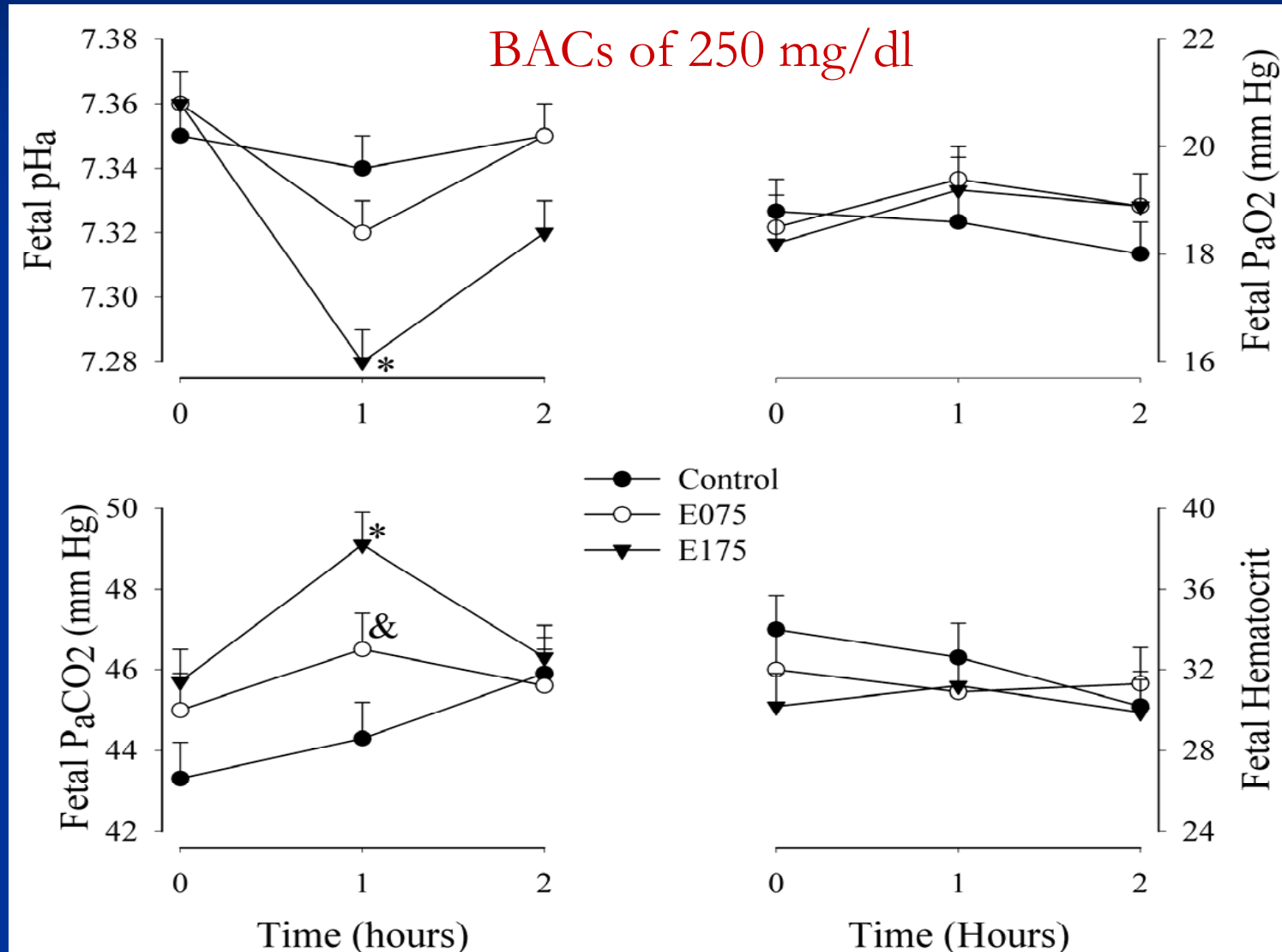
New York, New York

Use of ethanol in prevention of premature delivery

To the Editor:

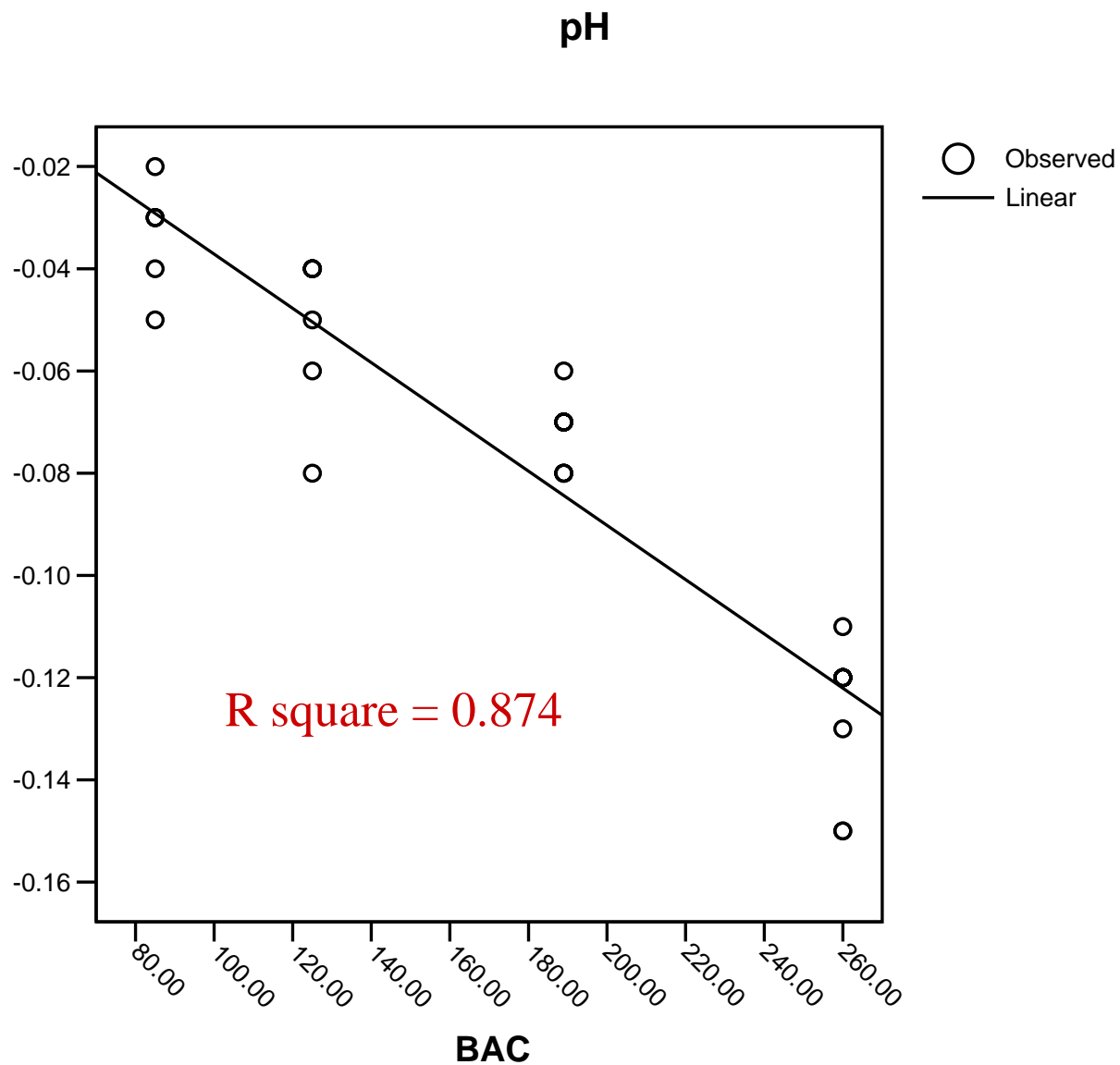
In the issue of March 15, 1971, of the AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY, Horiguchi and associates¹ have described the effect of ethanol upon uterine activity and fetal acid-base state of the pregnant rhesus monkey. It is regrettable that such seasoned investigators have permitted the implication that the treatment of threatened premature labor with ethanol as described by Fuchs and colleagues² is not only ineffective but also potentially dangerous to the fetus, although their experimental conditions were

Maternal and fetal hypercapnea are robust responses to maternal ethanol exposure



Arterial pH and BAC are highly correlated

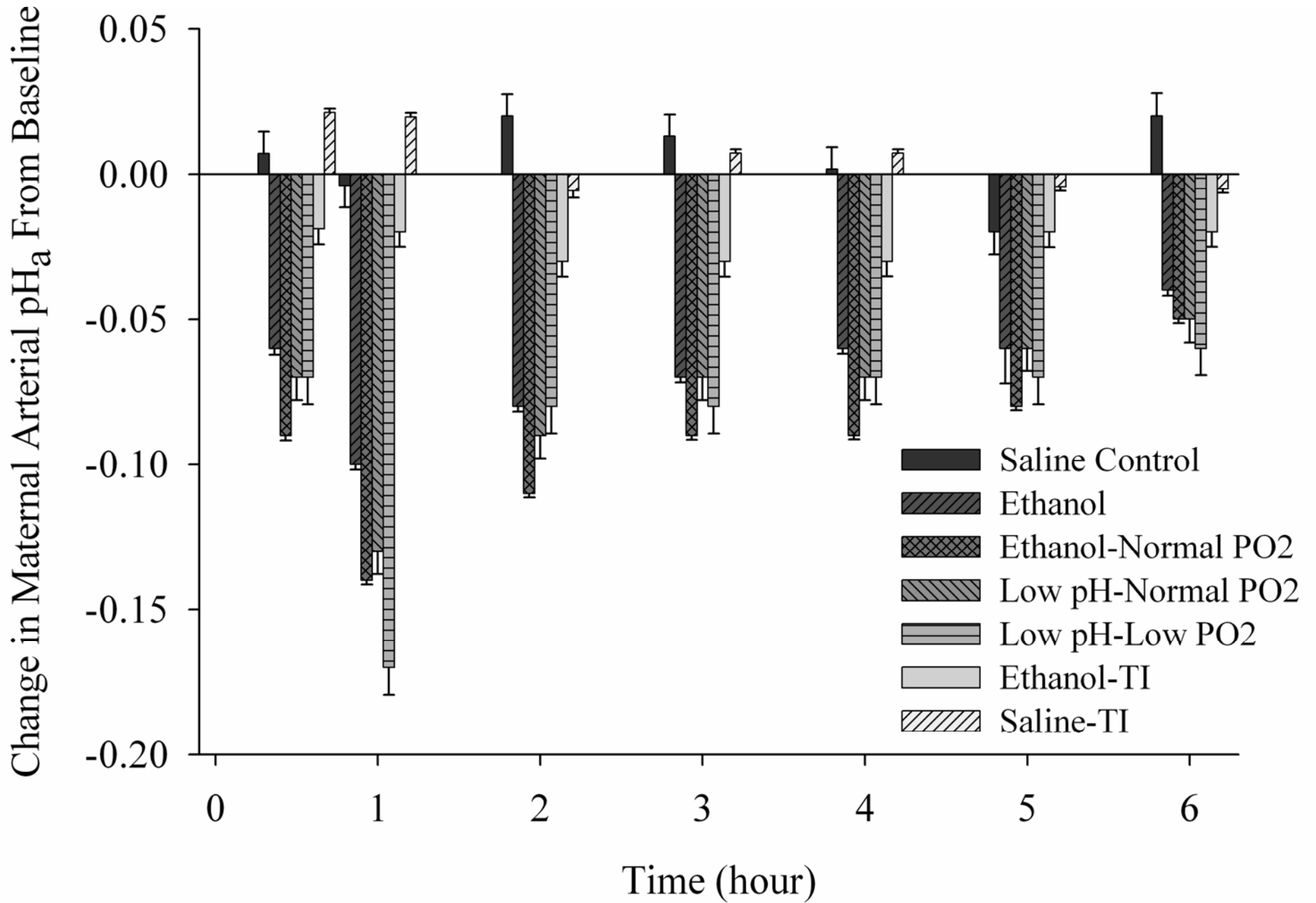
Plot of delta pH against BAC

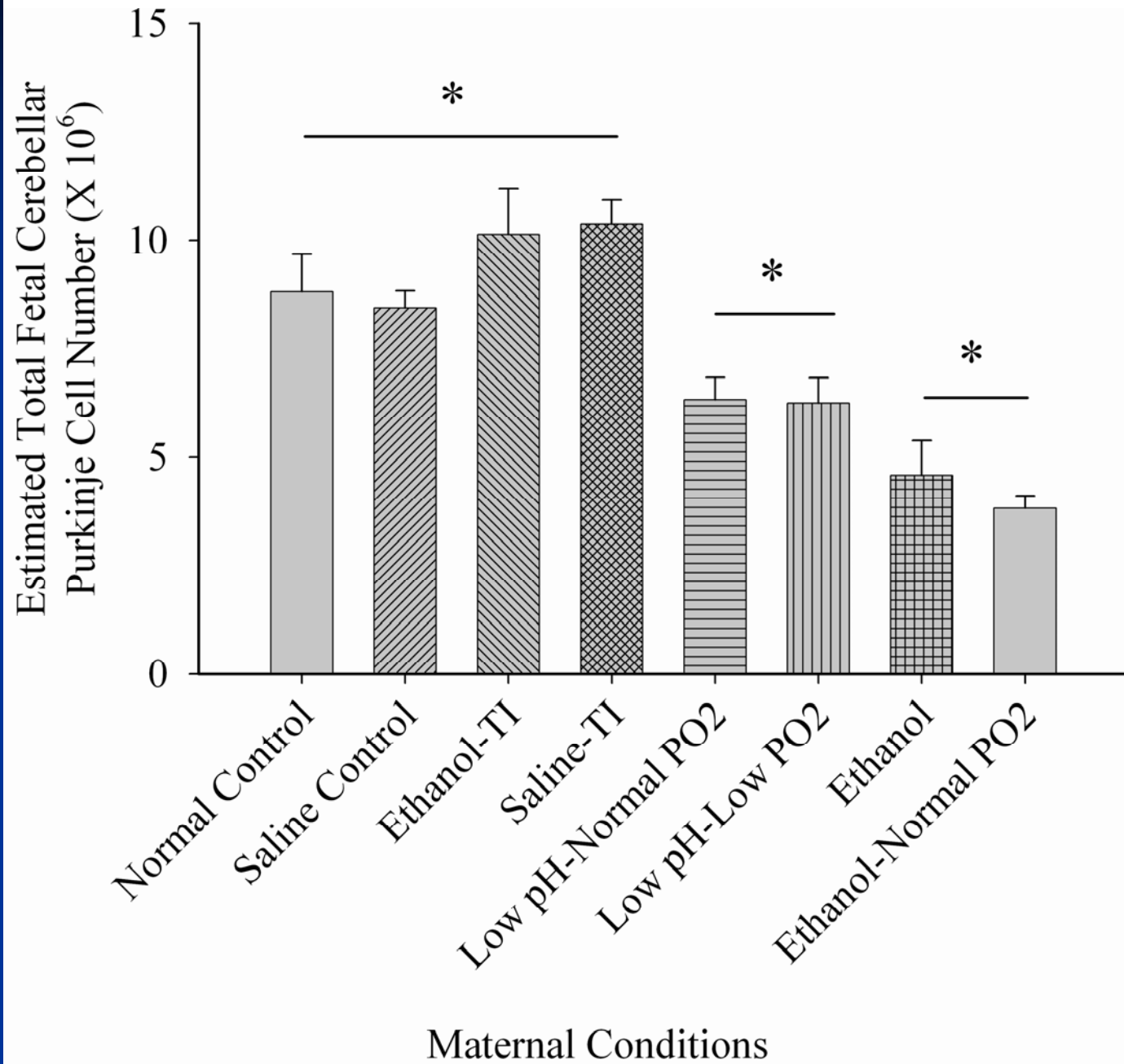


Do the repeated periods of fetal acidemia mediated by alcohol exposure cause fetal brain injury?

- Saline
- Alcohol
- Hypercapnea
- Hypercapne and reduced maternal oxygen
- Pharm prevention of hypercapnea
- Pharm saline control





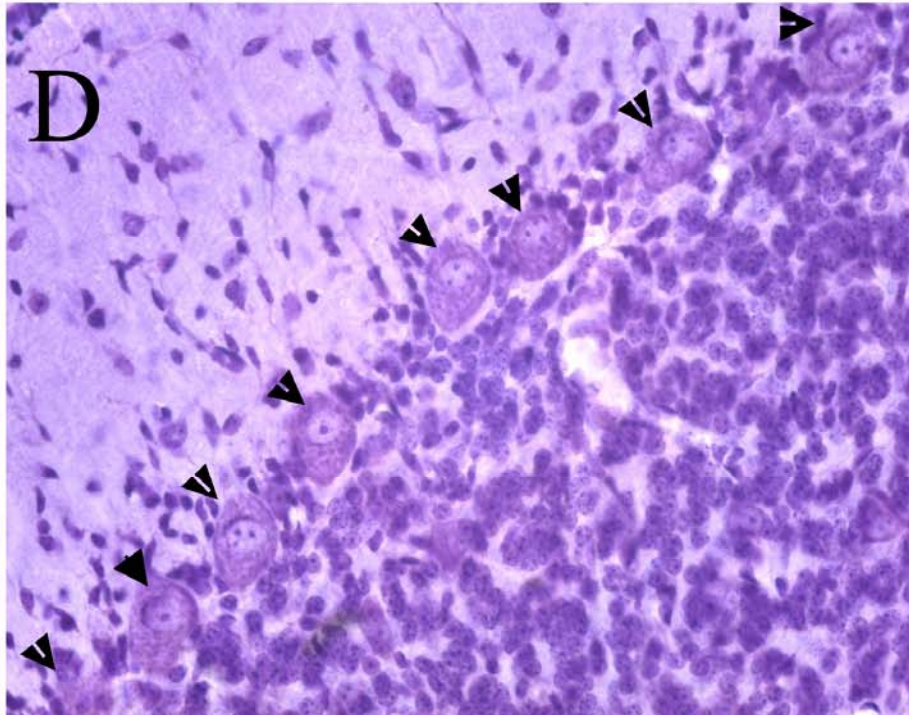
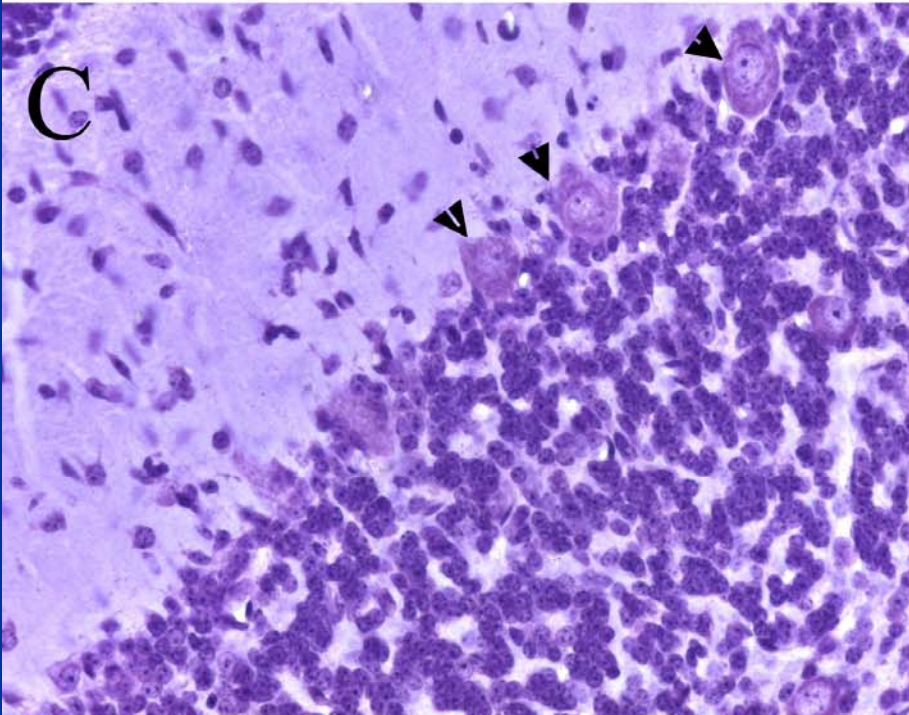
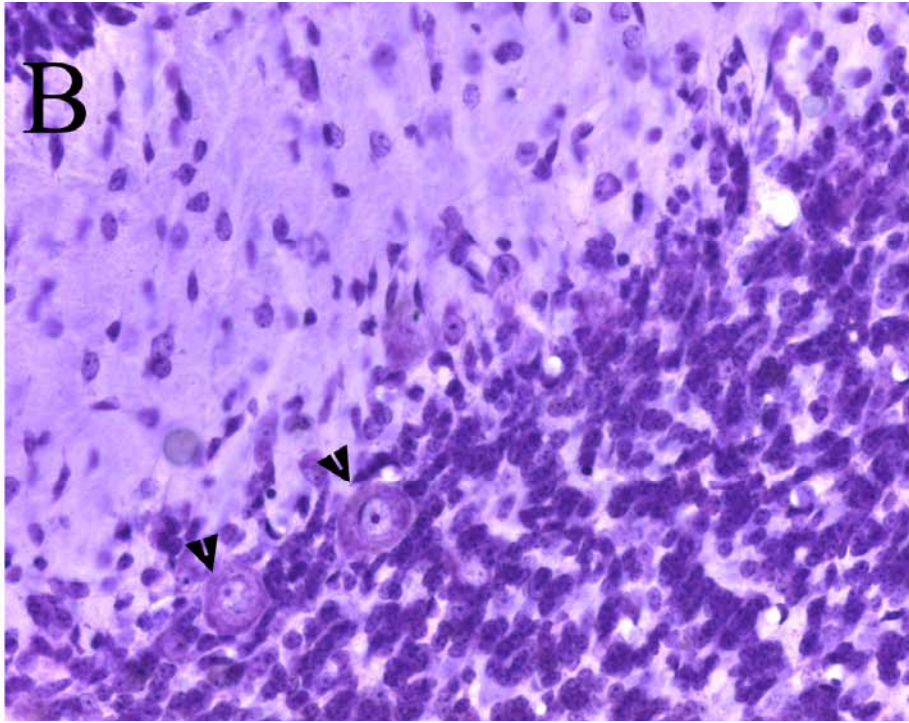
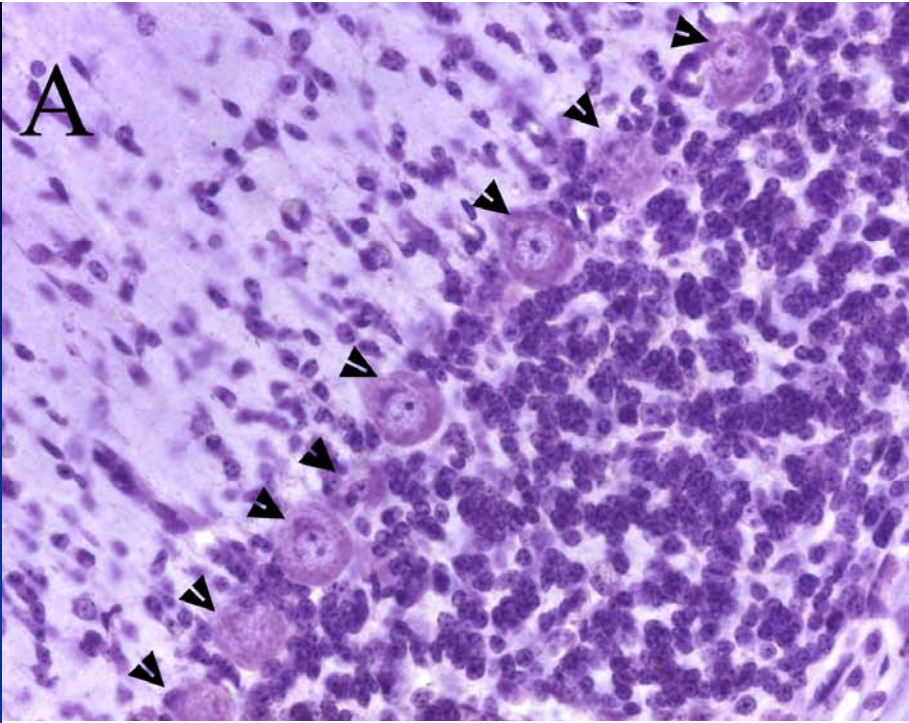


TASK Channels

- Two pore domain acid sensitive K^+ channels
- Outwardly rectifying K^+ channels
- TASK 1 closes in response to pH changes in the same range as those caused by our alcohol paradigm and are found in chemoreceptors and in cerebellar granule cells and Purkinje cells
- TASK 3 are not responsive to pH in the range of change observed with alcohol and are found in Purkinje cells in humans and in Purkinje and cerebellar granule cells in rats
- They are also modulated by oxygen tension and muscarinic agonists

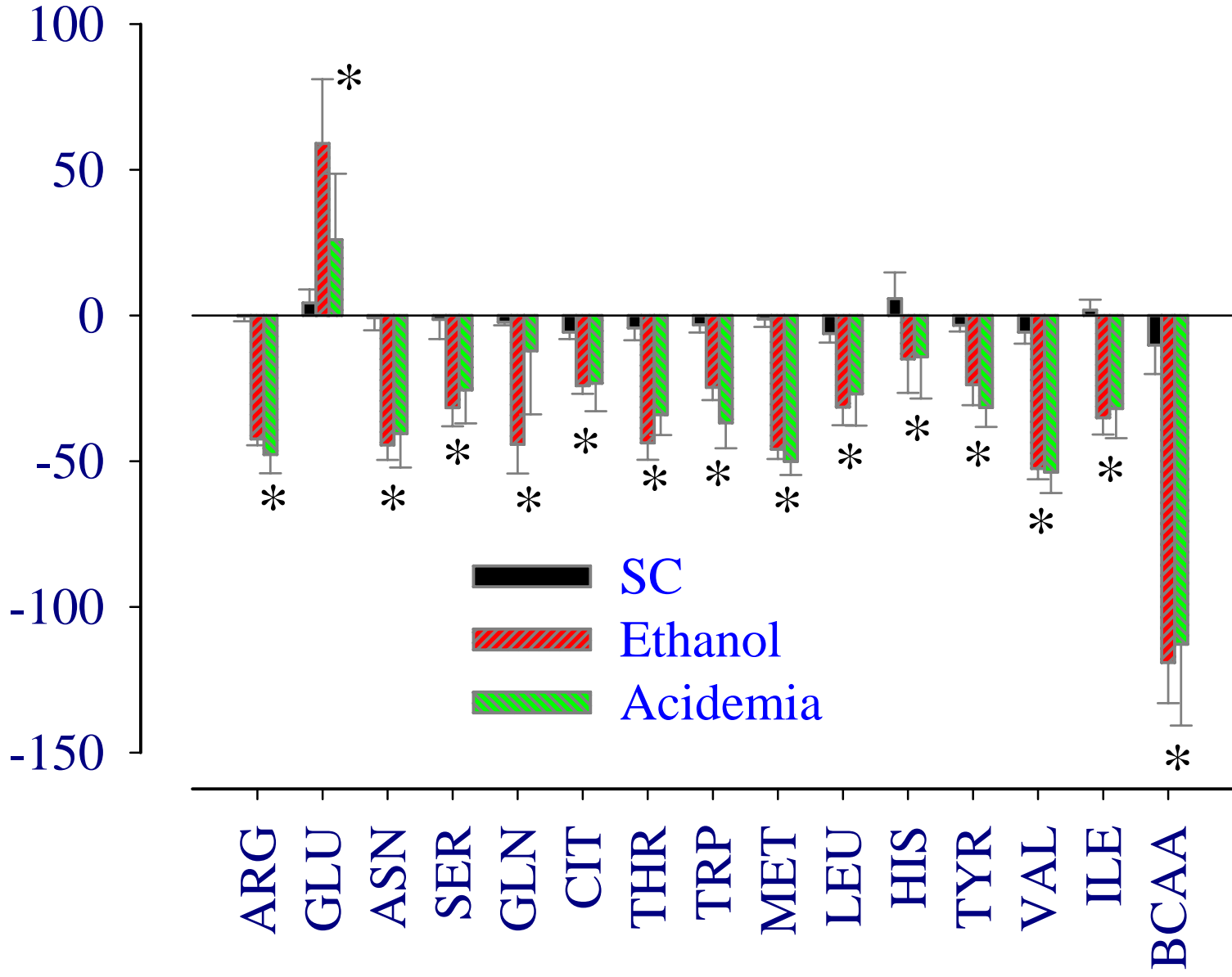
Conclusions

- 50% of protection was from eliminating the pH alteration, TASK 1 channel inhibition
- 50% is due to TASK 3 channel inhibition in granule and or Purkinje cells (TASK 3 is not sensitive to pH changes in this range)
- MOA? Growth factor release, increased ROS scavenging, altered activity of excitatory neurotransmitters, reduce apoptosis?



**Might there be a nutritional way
to mitigate the acidemia mediated
injury?**

% change in maternal plasma
amino acid concentrations
at one hour



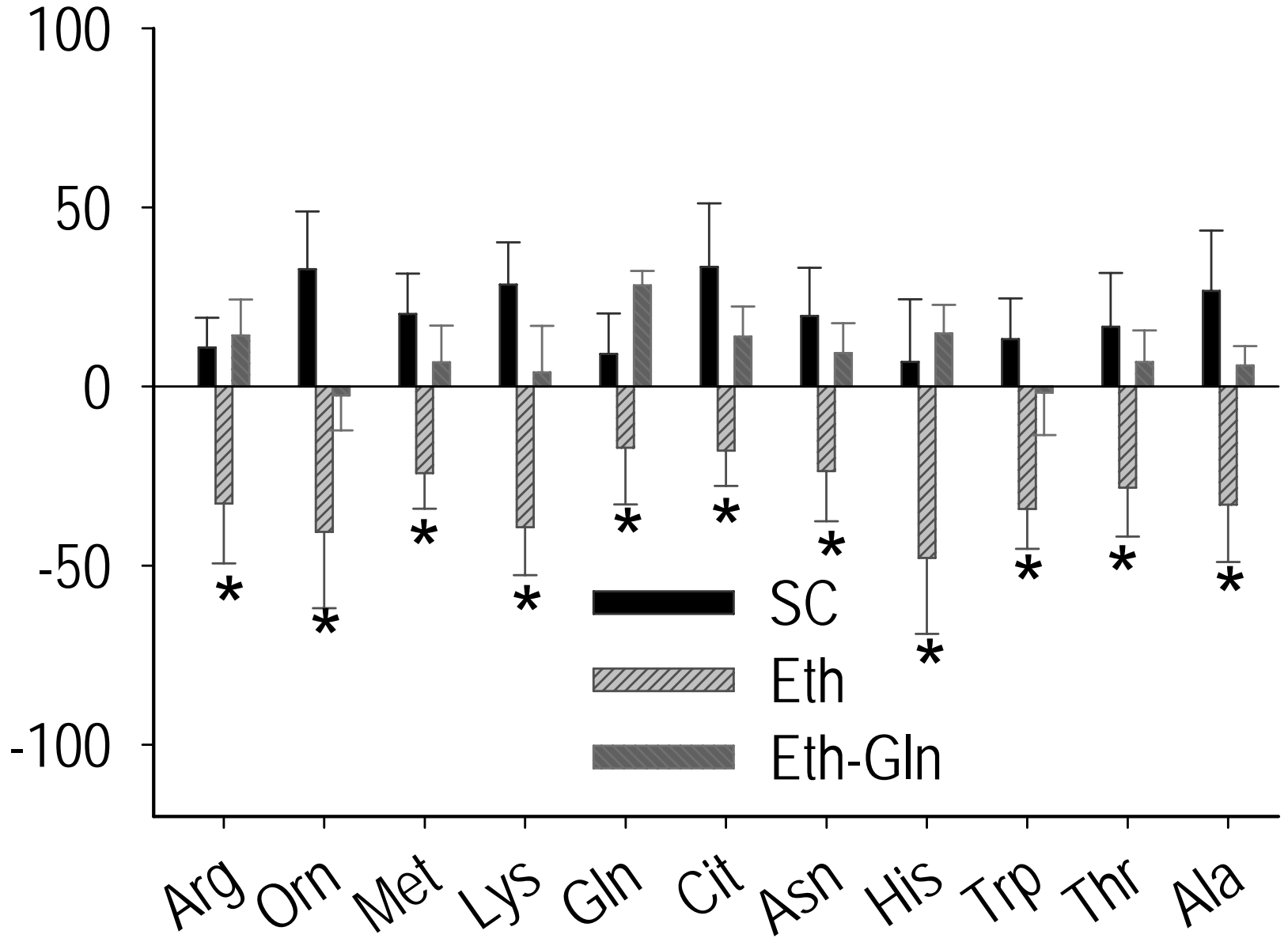
Glutamine

- Glutamine is the most pluripotent amino acid
- Glutamine is central in the metabolic adaptation to acidemia
- Glutamine plays a counteractive role to increases in oxidative stress

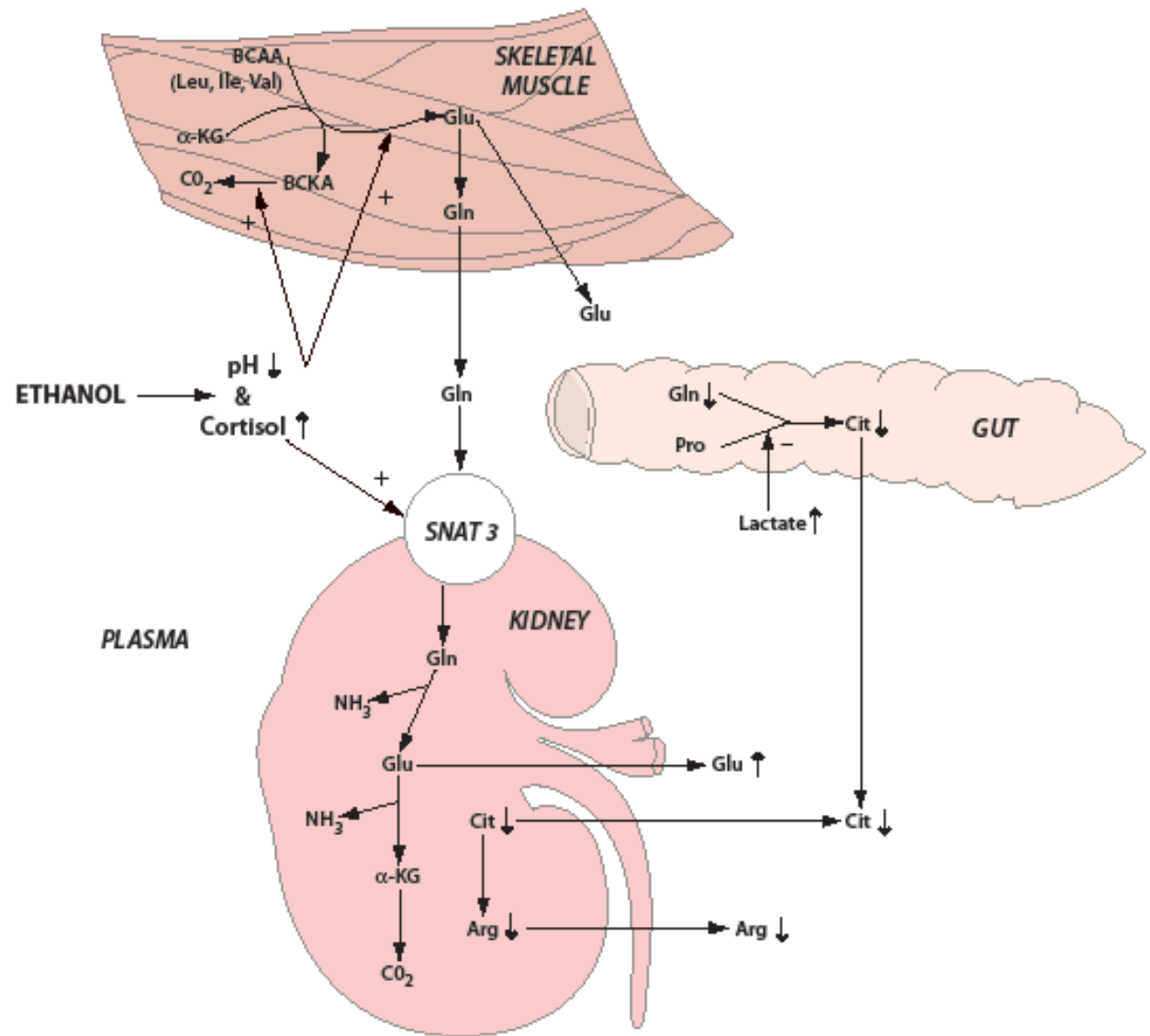
Reduced maternal glutamine results
in reduced fetal glutamine.

Can we prevent this?

% Change in Fetal Plasma Amino Acid Concentration Compared to 0 h



**Alcohol results
in acidemia,
elevations in
cortisol and in
reduced
maternal
glutamine**





BLENDING NUTRITION

WITH GREAT TASTE

Multi Vitamin & Mineral - 45c

The body requires a good balance of a wide variety of nutrients. A multi-vitamin & mineral supplement should be what you use to provide a foundation for living a healthier and longer life.

Fiber - 50c

Found in many foods, fiber helps to lower the blood cholesterol level and stabilize blood sugar levels. It helps prevent colon cancer, constipation, obesity, and many other disorders.

L-Glutamine - 60c

L-Glutamine is the most abundant free amino acid found in the muscles of the body. Because it can readily pass the blood-brain barrier, it is known as brain fuel. L-Glutamine decreases sugar cravings and the desire for alcohol.

Spirulina - 45c

Nature's richest and most complete source of total organic nutrition.

Fat Burners - 20c

A unique combination of L-Carnitine, Choline, Inositol & Chromium Picolinate. Fat burners help with fat transport and metabolism of oils.

60c

Glutamine is a nutrient variety of foods. It's the main fuel of the muscles and when muscle tissue is broken down during exercise it then burns off energy.

20c

Recent writings as a pollen is 30% glutamine nearly every required for a variety of known body enzymes.

Plant - 45c

Fruits, vegetables, and antioxidants have effective nutrients that free from "free radicals" in body's cells and tissues, reduce stress ulcers, respiratory system and

L-Glutamine - 60c

L-Glutamine is the most abundant free amino acid found in the muscles of the body. Because it can readily pass the blood-brain barrier, it is known as brain fuel. L-Glutamine decreases sugar cravings and the desire for alcohol.