The brain’s capacity to adapt to its environment is both its greatest strength and greatest weakness.

Brain plasticity is a double-edged sword.

Possible challenges to healthy brain development:

- How is brain development impacted – for the better and for the worse – by environmental factors in utero and in childhood?
- Epigenetics
- What are the long-term consequences of early brain lesions?
- Can we identify key protective factors for vulnerable children and develop effective prevention strategies and promising interventions?

Windows of opportunity:

- A brain network is most open to environmental influences before it is fully developed.
- Some brain networks mature very early, while others are not fully mature until ~ age 20.
- Interventions targeting late-maturing networks could help to compensate for deficits in early-maturing ones.

Critical questions:

- How is brain development impacted – for the better and for the worse – by environmental factors in utero and in childhood?
- Epigenetics
- What are the long-term consequences of early brain lesions?
- Can we identify key protective factors for vulnerable children and develop effective prevention strategies and promising interventions?

This initiative:

- **Goal:** to encourage collaborations between CHO and UCB on transdisciplinary research that has the potential to improve the lives of children.
- **Focus:** the factors – both negative and positive – that alter the trajectory of brain development.
- **Members:** Over 50 Investigators, clinicians, and staff at UCB Berkeley and Children’s Hospital Oakland have expressed an interest.
Participating institutions at UC Berkeley

Child Research Center

“From neurons to neighborhoods”

Sample CHO Members

Physical Injury
- Kuperman, M.D., Pediatric Neurologist
- Ivins, Ph.D., Early Intervention Services
- Greenwald, Ph.D., Early Intervention Services
- Heffron, Ph.D., Early Intervention Services
- Devoss, Ctr., Vulnerable Child
- Briscoe-Smith, Ph.D., Center for the Vulnerable Child
- Orfider, Ph.D., Center for the Vulnerable Child
- Hamilton, M.D., Ctr., Child Protection
- Bachrach, M.D., Adolescent Medicine
- Nichols, M.D., Hospitalist/Public Health
- Kuperman, M.D., Neurology
- Auguste, M.D., Neurosurgery
- Cohen, Imaging
- Martin, Imaging
- Kim, Surgery
- Cvijanovich, M.D., Intensive Care
- Gilgoff, M.D., Ctr., Child Protection
- Neufeld, M.D., Rehabilitation

Environmental/Social/Emotional Risk Factors
- Frame, Early Intervention Services
- Ivins, Early Intervention Services
- Greenwald, Early Intervention Services
- Heffron, Early Intervention Services
- Devoss, Ctr., Vulnerable Child
- Briscoe-Smith, Ctr., Vulnerable Child
- Orfider, Ctr., Vulnerable Child
- Hamilton, M.D., Ctr., Child Protection
- Bachrach, M.D., Adolescent Medicine
- Nichols, M.D., Hospitalist/Public Health
- Kuperman, M.D., Neurology
- Auguste, M.D., Neurosurgery
- Cohen, Imaging
- Martin, Imaging
- Kim, Surgery
- Cvijanovich, M.D., Intensive Care
- Gilgoff, M.D., Ctr., Child Protection
- Neufeld, M.D., Rehabilitation

Mission

Supporting research collaborations:
- A platform for communication among members
- A mechanism for enrolling patients in research
- Streamlining human subjects protocol applications

Sharing expertise:
- Large biannual lectures
- Announcing other relevant talks in newsletter
- Making relevant UCB course material available
- Children’s Medical Conference in Monterey?

Acquiring funding:
- Collaborative grant-writing within research themes
- Fundraising

Fundraising goals

- Full-time staff member to support infrastructure:
  - Patient recruitment
  - Grant-writing
  - Organizing lectures, courses
  - Maintaining website and newsletters
  - Outreach activities
- Seed funding to jump-start UCB-CHO collaborations

Discussion

1. Proposed themes
   - Environmental influences on the developing brain
     socioeconomic status, chronic stress, parental influences, schooling
   - Long-term consequences of early brain damage
     traumatic brain injury, tumors, stroke, dysplasia, etc.

2. Infrastructure
   - Supporting research collaborations
   - Sharing expertise
   - Acquiring funding

Comments from a few members

- Robert Knight, M.D., Head of Frontal Lobe Patient Cohort
- Rachel Kuperman, M.D., Pediatric Neurologist
- Barbara Ivins, Ph.D., Early Intervention Services
- Allison Briscoe-Smith, Ph.D., Center for the Vulnerable Child
- General discussion