

Integrating Science to Health



Laboratory Research

- ~110 faculty, ~350 postdocs
- 737 publications in 2009
- \$97.2 million in grants



Clinical Research

- 214,509 outpatient visits
- 2,754 inpatient admissions
- 402 active clinical trials

Michael A. Dyer, Ph.D.

Integrating Science to Health

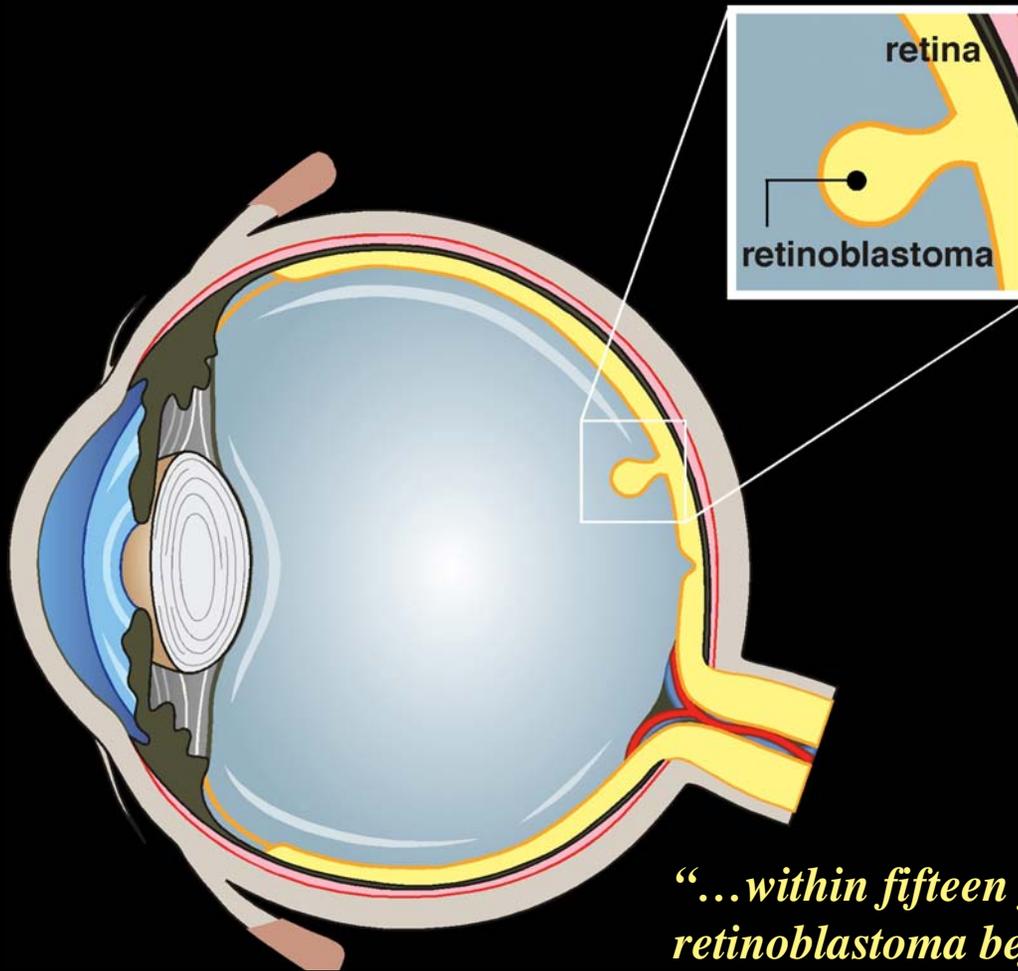


Education and Outreach

- All discoveries and data made freely available to public
- Results from clinical trials become standard of care around the world
- Educate public about childhood cancer

Michael A. Dyer PhD SDB Education Symposium August 6. 2010 Albuquerque, NM

Retinoblastoma is the 3rd Most Common Form of Cancer in Infants

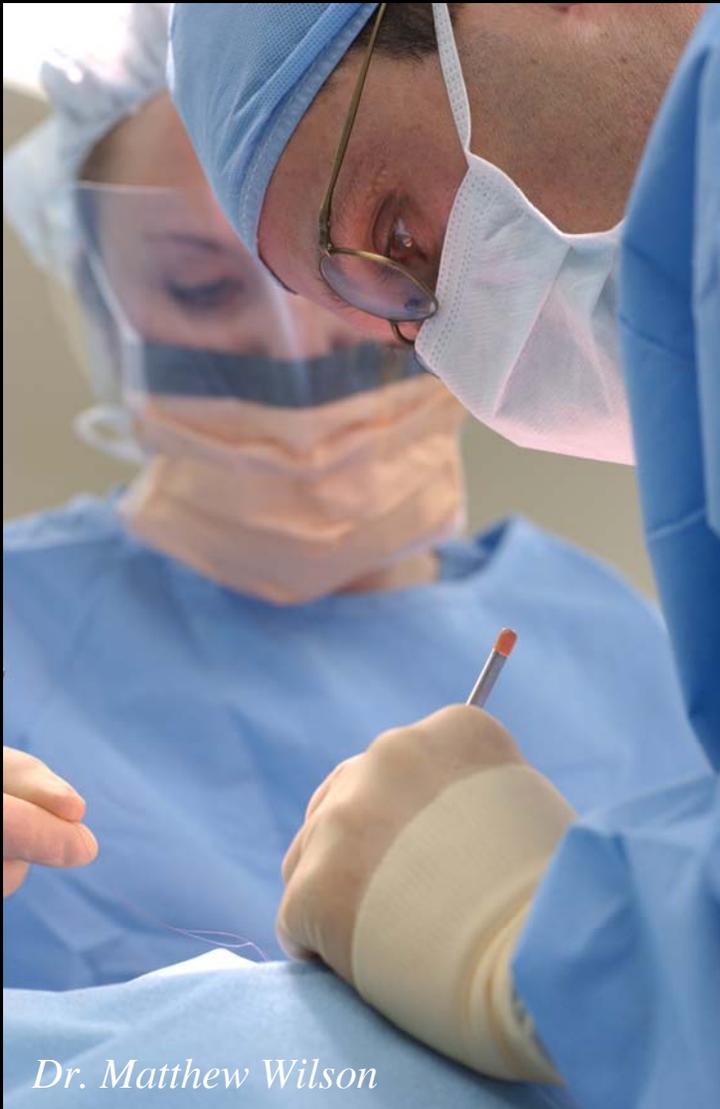


- ~5,000 cases/year Worldwide
- 100% Fatal if Untreated
- 10% Survival for Metastatic RBL
- Developmental Tumor
- First Tumor Suppressor Gene

“...within fifteen years, at the outside, we’ll be able to stop retinoblastoma before it begins. I’m so sure of that that I’ve already given the drug a name. I call it retino-revert.”

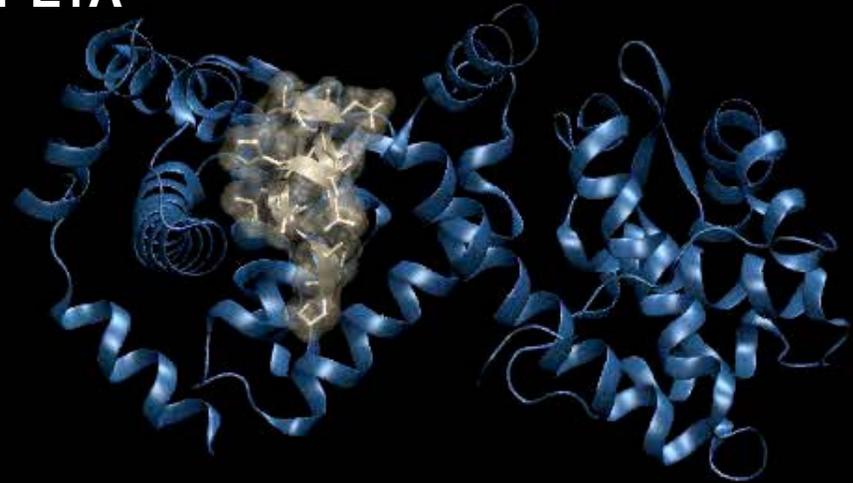
Dr. David Abramson, 1986

24 years Later: Bridging the Gap Between Clinical & Laboratory Research



Dr. Matthew Wilson

RB1-E1A



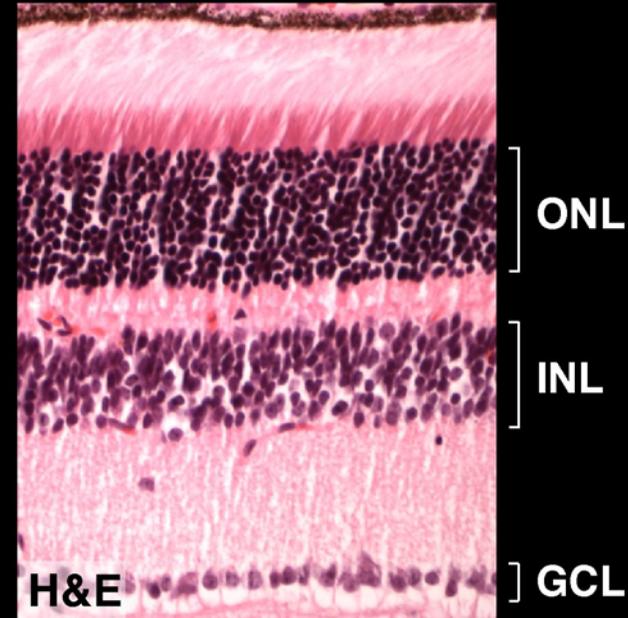
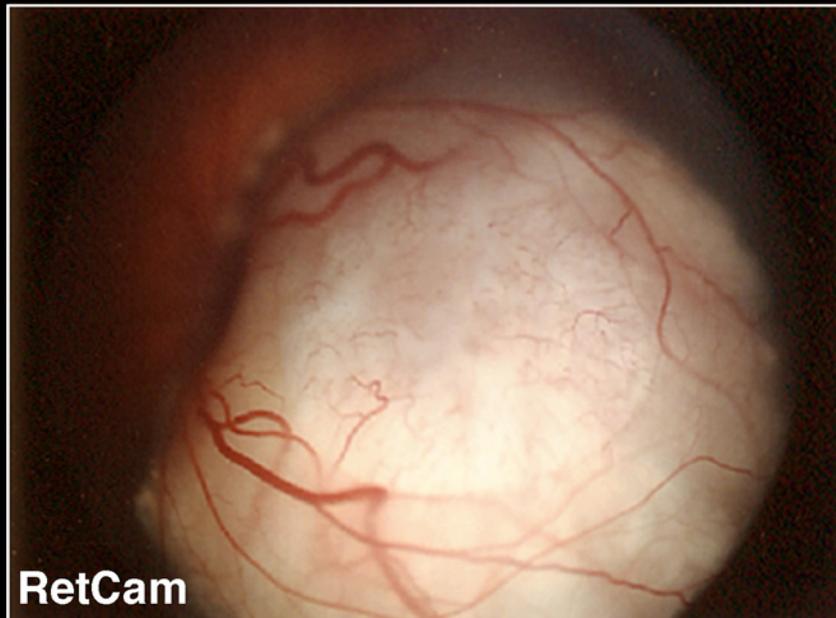
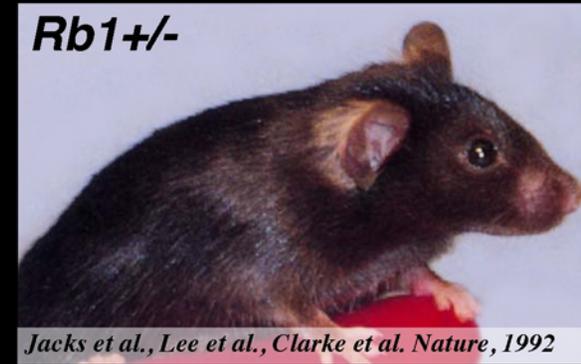
CLINICAL RESEARCH

- radiation
- chemotherapy
- surgery
- focal therapy

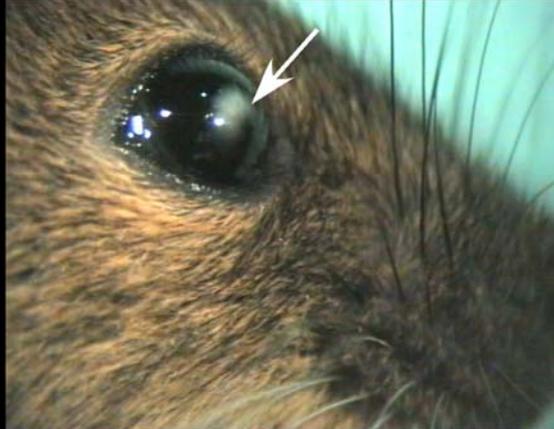
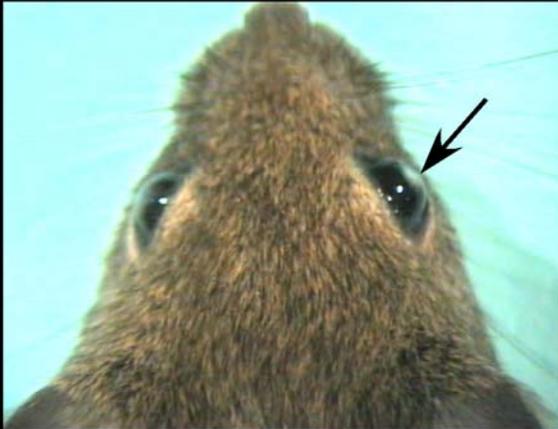
LABORATORY RESEARCH

- 2-hit hypothesis
- 1st tumor suppressor
- knockout mice
- pathway analysis

***RB1* Gene Inactivation Leads to Retinoblastoma in Humans but not Mice**

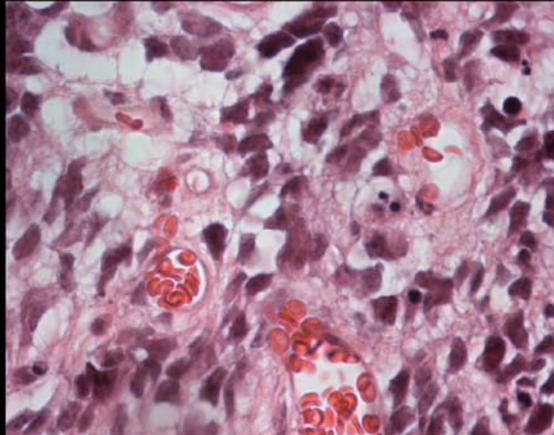


The First Knockout Mouse Model of Retinoblastoma



2004: Zhang et al. The First Knockout Mouse Model of Retinoblastoma. (*Cell Cycle*)

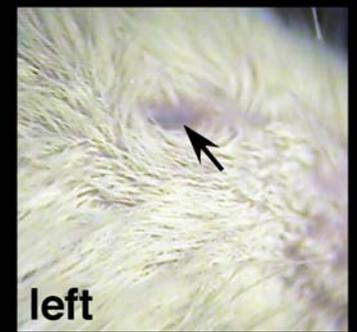
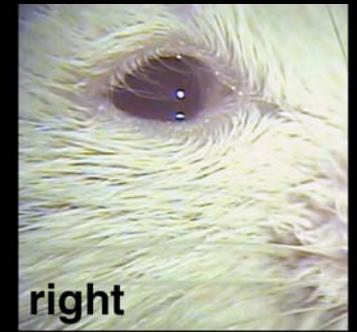
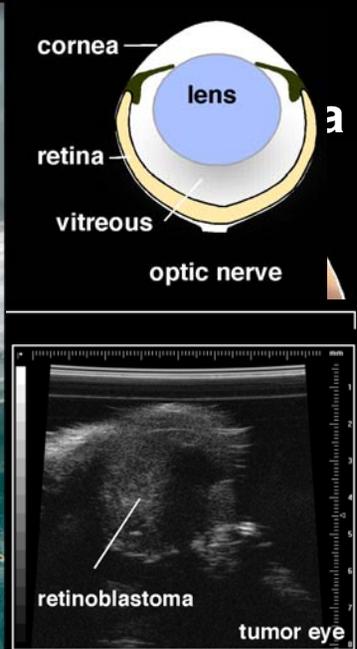
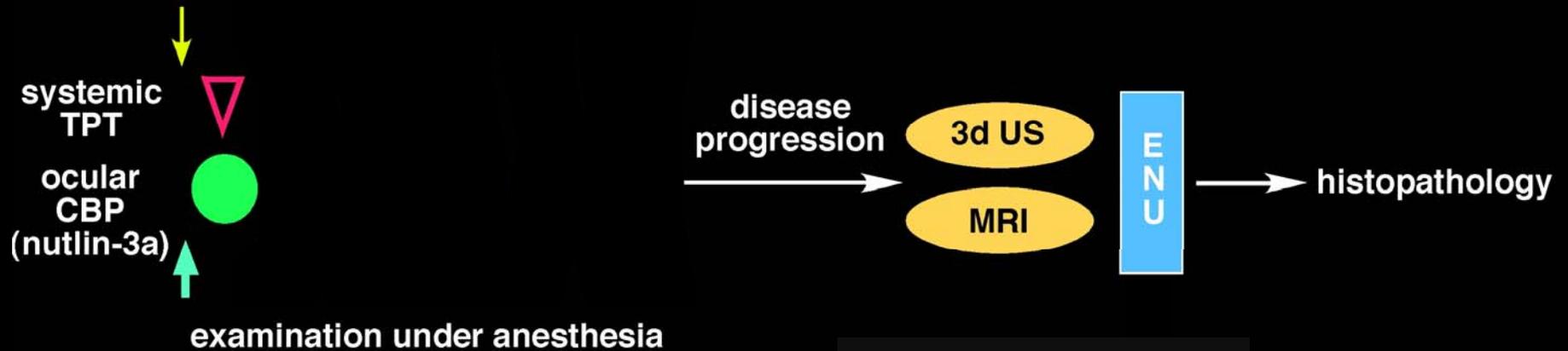
2004: MacPherson et al. Cell Type Specific Effect of Rb Deletion in the Murine Retina. (*Genes & Development*)



2004: Chen et al. Cell Specific Effects of Rb or Rb/p107 Loss On Retinal Development. (*Cancer Cell*)

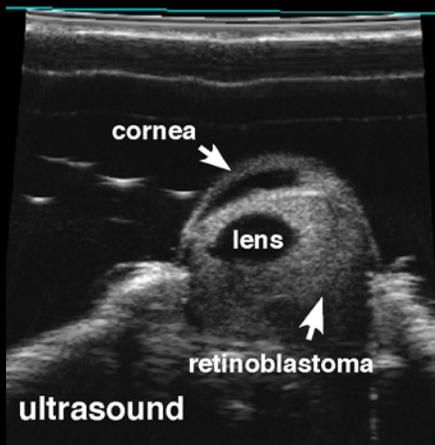
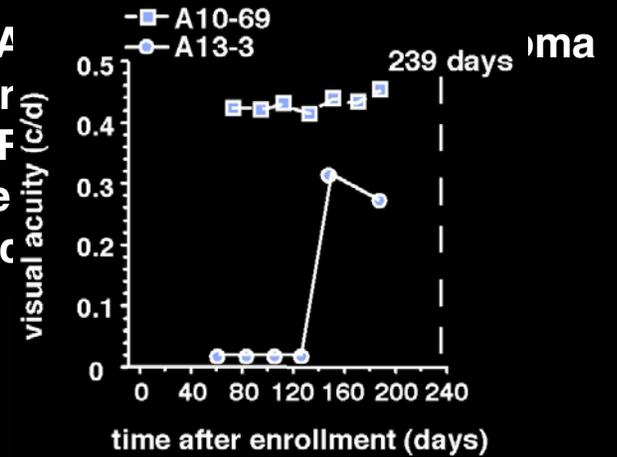
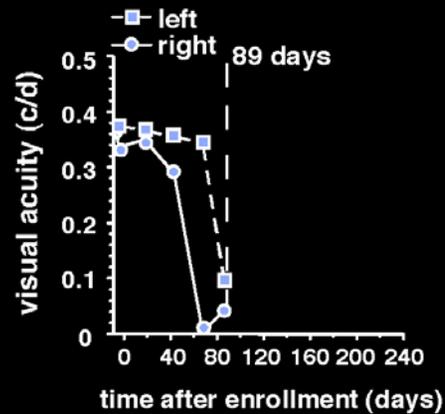
2006: Donovan et al. Compensation By Tumor Suppressor Genes During Retinal Development. (*BMC Biology*)

Retinoblastoma Preclinical Trial with 212 Mice Enrolled to Date on 3 Trials

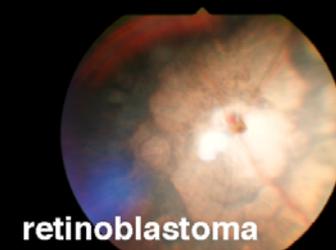
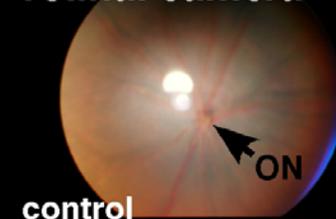


TPT/CBP Response in Humans and Mice

Diagnosis: A
Age at Diagnr
Treatment: F
Current Age
Vision: Enucl



retinal camera



Left

Representative example from ongoing study: DSMB Approved 11/17/09

Retinoblastoma Translational Research Team

Chemical Biology

Drs. Kip Guy, Anang Shelat, David Smithson,
Fangyi Zhu, Ying Shen

Structural Biology

Drs. Brenda Schulman, Don Bashford, Tony Ferreira
and Richard Kriwacki
Dr. Wuyuan Lu

Pharmacology and Toxicity

Drs. Clinton Stewart and Michael Tagen
Dr. Henry Edelhauser

Pathology and Toxicity

Drs. David Ellison and Matt Wilson

Diagnostic Imaging

Drs. Robert Ogg and Beth McCarville

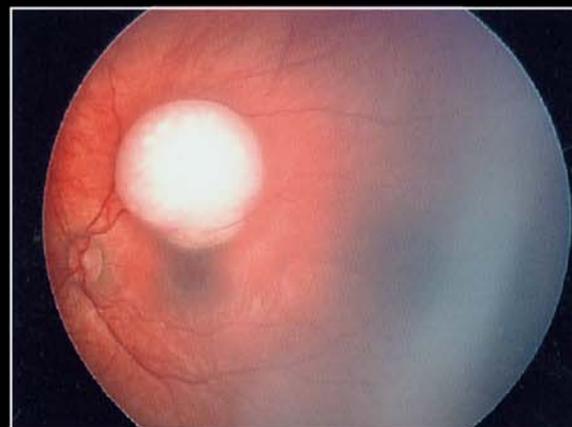
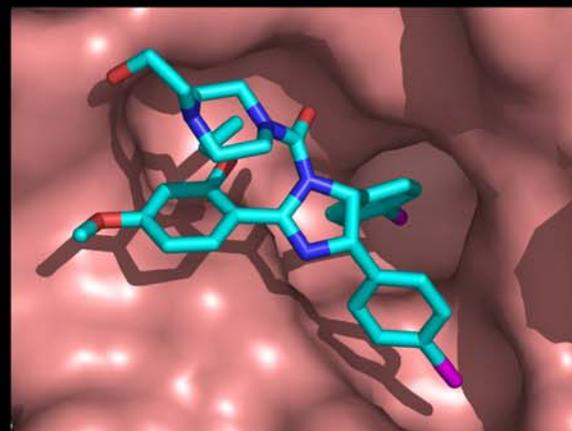
Neurobiology and Cancer Biology

Dr. Dianna Johnson
Drs. Connie Cepko, Karen Vousden, Aart Jochemsen

Patient Care and Clinical Trials

Drs. Matthew Wilson, Carlos Rodriguez-Galindo, Barrett Haik
Dr. David Abramson

From Bench to Bedside



Missed Opportunities in Translational Research

The New York Times
Sunday, June 27th, 2009

Grant System Leads Cancer Researchers to Play it Safe



“The cancer institute has spent \$105 billion since President Nixon declared war on the disease in 1971.

Yet the fight against cancer is going slower than most had hoped.”

We need to build interdisciplinary teams made up of doctors and researchers to efficiently translate research discoveries into new treatments for childhood cancer.

St. Jude Cancer Education Outreach Program (“Cure4Kids for Kids”)



Cure4Kids™

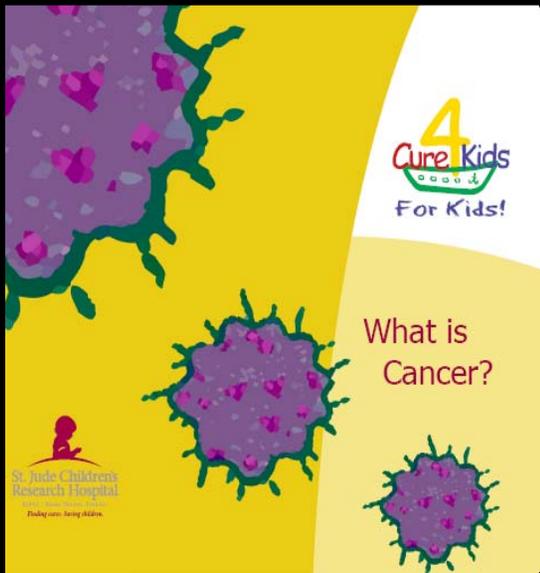


Cure4Kids for Kids Launched! Explore education on cancer and healthy living for kids, parents and teachers. [Visit Site](#)

- Started in 2006 as part of Comprehensive Cancer Center outreach initiative
- Housed in International Outreach Program
- School-based education program
- Educate students, parents, teachers about:
 - Cancer and dispel misconceptions
 - Healthy living practices to reduce the risk of cancer in adulthood
 - Inspire science and health-related careers

Accomplishments

- 1,800 students
- 150 teachers
- 20+ St. Jude departments
- 3 experts developed children's books



Format



- St. Jude experts visit local schools
- Give interactive, engaging presentations
- Lead hands-on, discovery-based activities

Career Talks at Local Schools

- Highlight Careers
 - Clinical care
 - Basic science
 - Computing
 - Administration
 - Writing
 - Etc.



Career and Research Day

- Hosted in conjunction with St. Jude Postdoctoral Association
- 20 students and 2 teachers from local high schools visit campus
 - “Career tour”
 - Mentoring luncheon
 - Hands-on lab experiment in GFP genotyping and electrophoresis



Teacher Training

- Three events in 2 years for local teachers
- St. Jude doctors, scientists, teachers participated as presenters
- Website with teacher

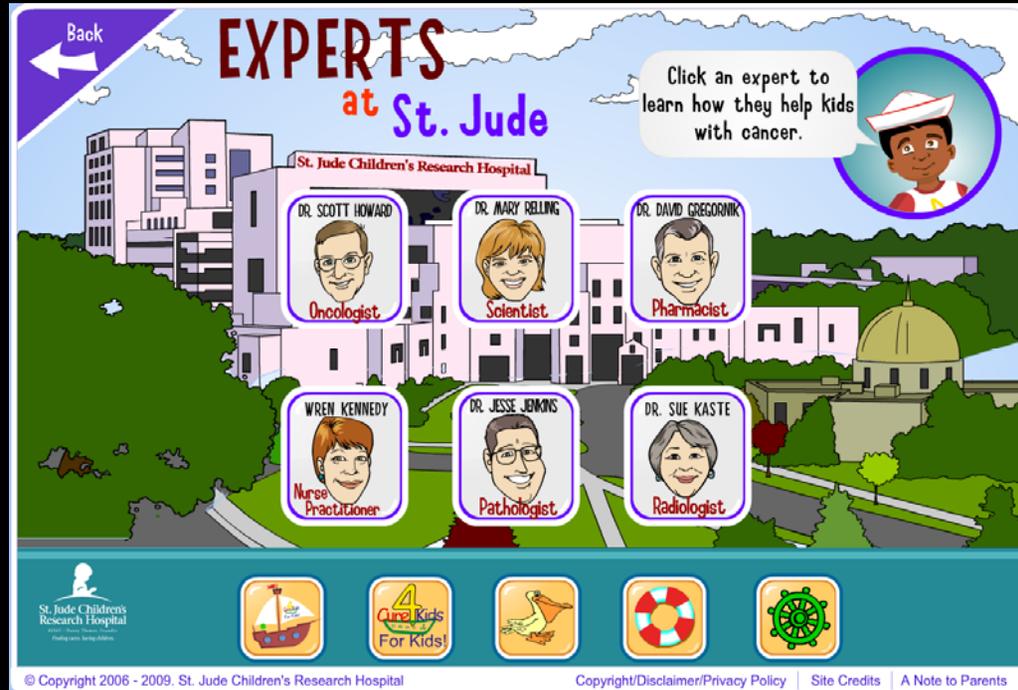


Cure4Kids for Kids
Professional Development Conference
June 8, 2010 Memphis, TN



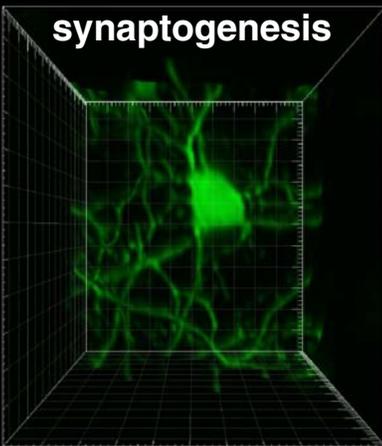
Cure4Kids for Kids Teacher
Summit April 2010

Educational Website

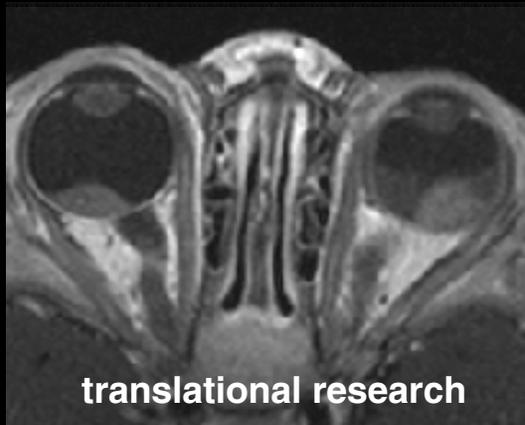
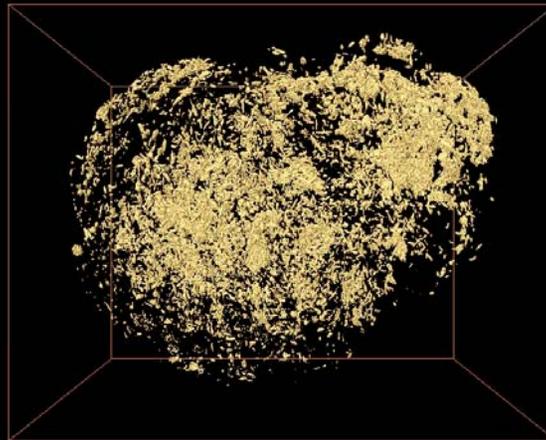


- Electronic access to education materials
- (eg. books, glossary, etc.)
- Extends classroom, increases access and reach
- “Experts” section profiling experts and careers
- www.Cure4Kids.org/kids

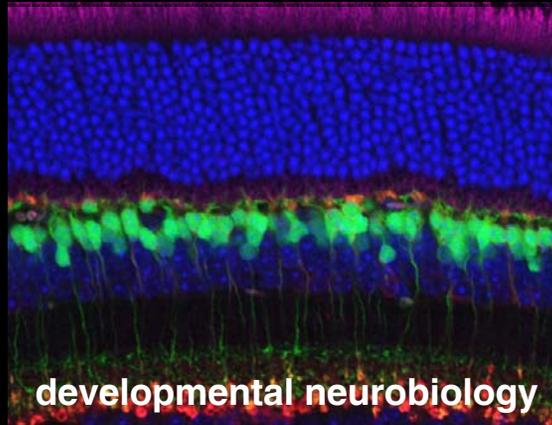
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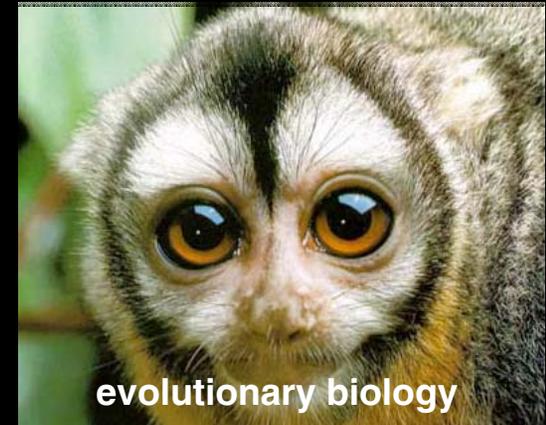
stem/iPS cells & reprogramming



translational research

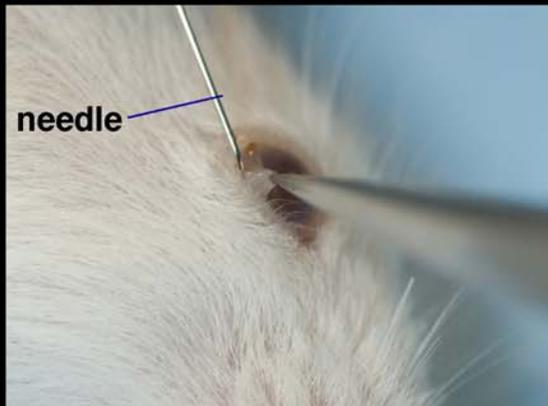
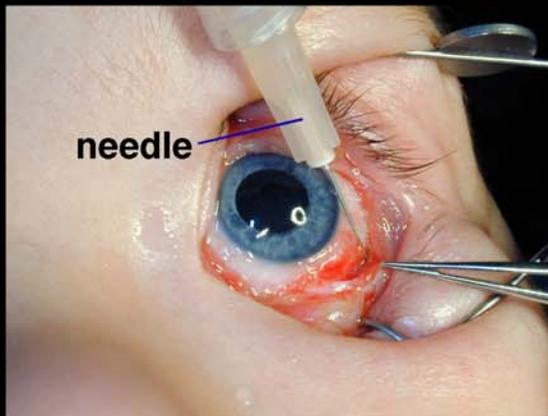


developmental neurobiology

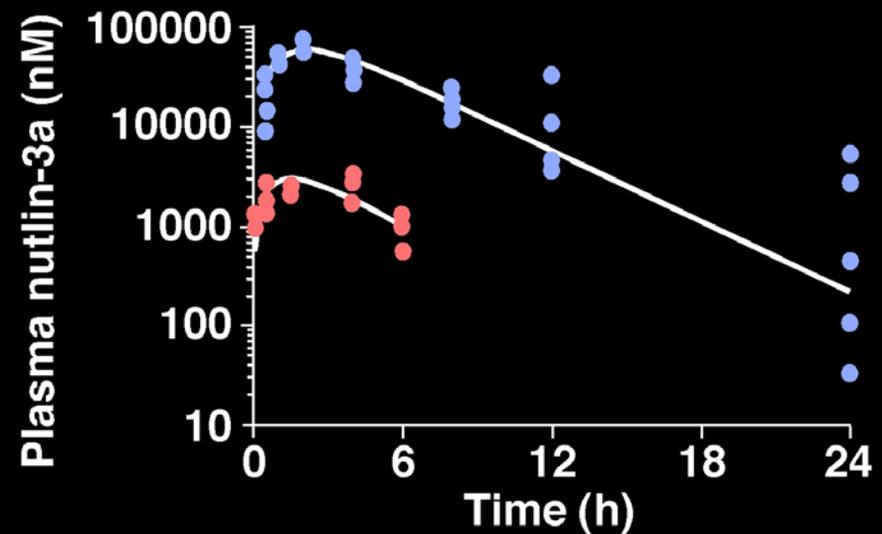


evolutionary biology

Pharmacokinetics of an Ocular Formulation of Nutlin-3a



oral (200 mg/kg)
subconjunctival (25 mM)



Ocular Formulation of Nutlin-3a
15% polypropylene glycol
10% propylene glycol
5% Cremophor EL
in PBS

Identification and Characterization of the First MDMX Inhibitor



296,488

4,363

1,152



13 Chemotypes

Damon Reed, Ying Shen and Kip Guy

