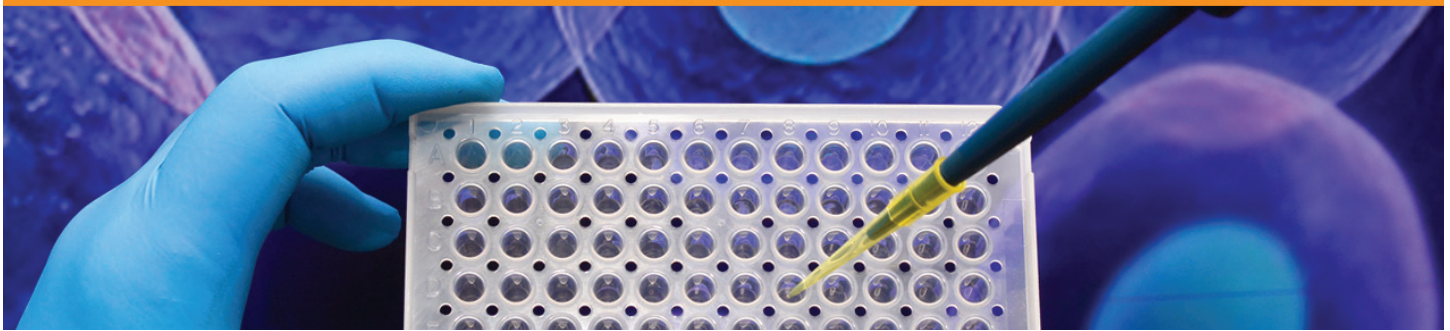
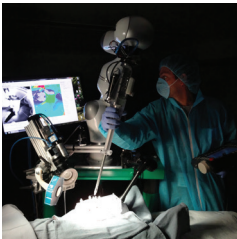
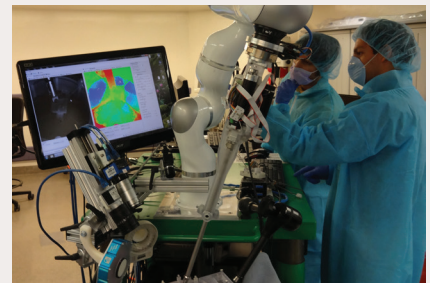


# 2016 Research Discoveries



## A BANNER YEAR FOR INNOVATION

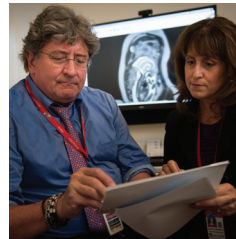
In 2016, clinicians and research scientists working at Children's National Health System published more than 1,100 articles in high-impact journals about a wide array of topics. A Children's Research Institute review group selected the top articles for the calendar year considering, among other factors, work published in top-tier journals with impact factors of 9.5 and higher.



### *Science Translational Medicine*

#### *Supervised autonomous robotic soft tissue surgery*

Despite dynamic scene changes and tissue movement during surgery, the study authors were able to demonstrate that the outcome of supervised autonomous procedures is superior to surgery performed by expert surgeons and robot-assisted surgical techniques in *ex vivo* tissue and in living experimental models, Peter C.W. Kim, M.D., Axel Krieger, Ph.D., and co-authors report in [Science Translational Medicine](#).



### *New England Journal of Medicine*

#### *Zika virus infection with prolonged maternal viremia and fetal brain abnormalities*

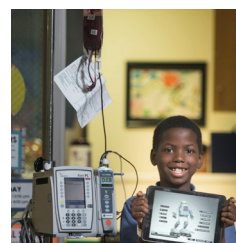
Researchers describe the case of a pregnant woman and her fetus infected with the Zika virus during the 11th gestational week. The fetal head circumference decreased from the 47th to 24th percentile. Zika RNA was identified in maternal serum at 16 and 21 weeks. Substantial brain abnormalities were detected on MRI without microcephaly or calcifications, they report in [NEJM](#).



### *JAMA Pediatrics*

#### *Association between trauma center type and mortality among injured adolescent patients*

The study team finds that mortality among injured adolescents was lower among those treated at pediatric trauma centers, compared with adolescents treated at adult trauma centers and mixed trauma centers, Randall S. Burd, M.D., Ph.D., and co-authors write in [JAMA Pediatrics](#).



### *The Lancet*

#### *Hydroxycarbamide versus chronic transfusion for maintenance of transcranial doppler flow velocities in children with sickle cell anaemia*

For high-risk children with sickle cell anemia and abnormal transcranial doppler (TCD) velocities who have not yet experienced severe vasculopathy, hydroxycarbamide can substitute for chronic transfusions to maintain TCD velocities and help to prevent primary stroke, study authors report in [The Lancet](#).



### *Nature Biotechnology*

#### *A dual AAV system enables the Cas9-mediated correction of a metabolic liver disease in newborn mice*

The authors intravenously infused two AAVs into a newborn experimental model with a partial deficiency in ornithine transcarbamylase. They reversed the mutation in 10 percent of hepatocytes and increased survival in newborns challenged with a high-protein diet. Gene correction in adult animals led to lethal hyperammonemia.



### *Nature Communications*

#### *Sirt1 regulates glial progenitor proliferation and regeneration in white matter after neonatal brain injury*

The researchers report that Sirt1 is an essential regulator of oligodendrocyte progenitor cell proliferation and oligodendrocyte (OL) regeneration after neonatal brain injury. Therefore, enhancing Sirt1 activity may promote OL recovery after diffuse white matter injury, Vittorio Gallo, Ph.D., and co-authors write in [Nature Communications](#).