



## Researchers Locate Specific Brain Cells Affected by Low Oxygen Levels at Birth

Premature babies (babies born before 37 weeks gestation) are at a higher risk of health complications than those born at term. Such complications include, but are not limited to, the following (1):

- More time spent in the Neonatal Intensive Care Unit (NICU)
- Breathing problems, such as respiratory distress syndrome (RDS)
- Infections resulting from an immature immune system
- Brain bleeds, such as intraventricular hemorrhage (IVH)
- Gastrointestinal problems, such as necrotizing enterocolitis (NEC)
- Blood problems, such as jaundice and anemia

For premature babies, low oxygen levels can more easily cause brain damage.

### Recent Research on Brain Cells

At [Stanford University School of Medicine](#), researchers have discovered that a specific set of brain cells are especially susceptible to damage from low levels of oxygen during birth (2). Sergiu and Anca Pasca created brain spheroids, or 3-D cell cultures that are identical to the functional and structural aspects of an infant's developing brain. They grew these cultures with the help of their colleagues to the point where they resembled fetal brain tissue midway through gestation.

Then, the researchers exposed the cultures to low oxygen levels for 48 hours, after which they restored oxygen levels. They found gene-expression changes in the genes that were previously known to respond to hypoxia. They also found changes in the genes of the subventricular zone, where progenitor cells were found to be differentiating into neurons sooner than normal. The Pascas wanted to figure out what would happen if they were able to stop these progenitor cells from differentiating too soon.

In their study, they were able to find a compound, called ISRIB, which would prevent the differentiation of these progenitor cells into neurons following a period of exposure to low



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levels of oxygen. This compound may be able to stop some of the effects of low levels of oxygen on premature babies.

### Related Reading

- [Preventing Premature Birth](#)
- [Magnesium Sulfate to Treat Premature Birth](#)
- [Advocating for Your NICU Baby: 7 Tips from a Former Obstetrical Nurse](#)

### Sources

Premature birth. (2017, December 21). Retrieved May 16, 2019, from <https://www.mayoclinic.org/diseases-conditions/premature-birth/symptoms-causes/syc-20376730>

Digitale, E. (2019, May 6). New research links brain injury from low oxygen to specific cells. Retrieved May 16, 2019, from <http://med.stanford.edu/news/all-news/2019/05/research-links-brain-injury-from-low-oxygen-to-specific-cells.html>