For stakeholders in the pediatric drug development space looking to focus their efforts, the Foundation for the National Institute of Health (FNIH) Convening Experts in Oncology to Address Children’s Health (COACH) Project is on the forefront of this field. COACH has assembled experts from diverse fields to review the most promising targets for drug development and provide recommendations to drive new preclinical research, including repurposing adult cancer drugs for children, which can move our society closer to a world without childhood cancer deaths.

### Project Rationale

- **As of 2022**
  - **76** oncology drugs are FDA approved for pediatric use
  - **373** oncology drugs are FDA approved for adult use

- There are **100x fewer pediatric patients** than adult patients available to participate in clinical trials.
  - Preclinical studies can ensure that the most appropriate drugs advance into pediatric clinical trials.
  - Annual Incidence: 15,000 for pediatric vs. 1.7 M for adult
  - % Participation in Clinical Trials: >50% for pediatric vs. <5%

There is only **1 drug approved for pediatric patients for every 5 drugs approved for adult patients.**

### Drug Assessment Methods

COACH experts asked the following questions to evaluate drug targets:

- Are relevant genes, including the drug target gene, altered in tumor cells?
- Is the drug target essential for normal cellular functions?
- Is the drug target expressed in tumor, but absent or expressed differently in normal cells, and can this be used to predict success of drug treatment?
- Do tumor cells respond to the drugs directed at the target?
- Do tumors shrink after drug treatment with a dose that does not show unmanageable side effects?

### Potential Cancer Target Pathways for Therapies

**Drugs targeting MDM2**

- Surviving proliferative signaling
- Enabling resistance to apoptosis
- Deregulating cellular metabolism
- Resisting cell death

**Drugs targeting EZH2**

- Nononcogenic epigenetic programming
- Enabling replicative senescence

**Drugs targeting CD47**

- Tumor-promoting inflammatory
- Polymorphic microbiomes

**Hallmarks of Cancer**

- Sustaining proliferative signaling
- Evading growth suppressors
- Resisting cell death
- Inducing or accessing angiogenesis
- Activating invasion & metastasis
- Enabling replicative immortality
- Tumor-promoting inflammatory

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COACH experts plan to convene several meetings to identify key preclinical research areas of focus to build bridges to breakthroughs for therapeutic development for pediatric cancers. For many families dealing with cancer and looking for hope, the future is just a little bit brighter. Scientific insights stemming from the initiative could make additional treatment options a reality for an untold number of kids.