Chimeric Antigen Receptor (CAR) and T Cell Receptor (TCR) Trials Registered with OBA

Total Protocols Registered with OBA = 111

- Oncology CARS: 75
- Oncology TCRs: 29
- HIV Studies: 7

* Includes 1 TCR and 6 CARS
Gene Transfer Protocols Registered with OBA from 2010 – August 2013

- New T cell Protocols: 22%
- All other Protocols: 78%
Increase in Protocols Using Gene-Modified T Cell Receptors

![Graph showing an exponential increase in the number of protocols from 1989-1994 to 2007-2012.](image)
Oncology Protocols
Target Distribution (1995 - present)

Hematologic Targets

Solid Targets

CD19
CD20
CD30
ROR1
Kappa1

CEA
PSMA
TAG-72
HER 2
GD2
cMET
EGFR
Vascular Endothelial Growth Factor Receptor
Alpha Folate Receptor
Mesothelium
VEGF Receptor
Cancer Testes Antigens
MART-1
GP 100
tyrosinase
p53
TNF-related...
Disease Targets (1995- present)

- CARs
- TCRs
Hematologic Targets (1995 – present)

**CARs**
- Hematologic Targets: 36%
- Other Targets: 64%

**TCRs**
- Hematologic Targets: 9%
- Other Targets: 91%

n = 104
CAR Generations

- First Generation*: 21%
- Second Generation#: 67%
- Third Generation†: 12%

* signaling through CD3 zeta only
# signaling through CD3 zeta and either CD28 or 4-1BB
† signaling through CD3 zeta/CD28 and 4-1BB or Ox40

n= 104
Pediatric Subjects Eligible?

<table>
<thead>
<tr>
<th>CARs</th>
<th>TCRs</th>
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<tbody>
<tr>
<td>Yes</td>
<td>30</td>
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<tr>
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n= 104
Number of Subjects Dosed (1995 – present)

Based on most recent data submitted to OBA

n = 104