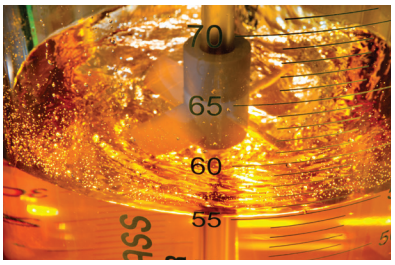
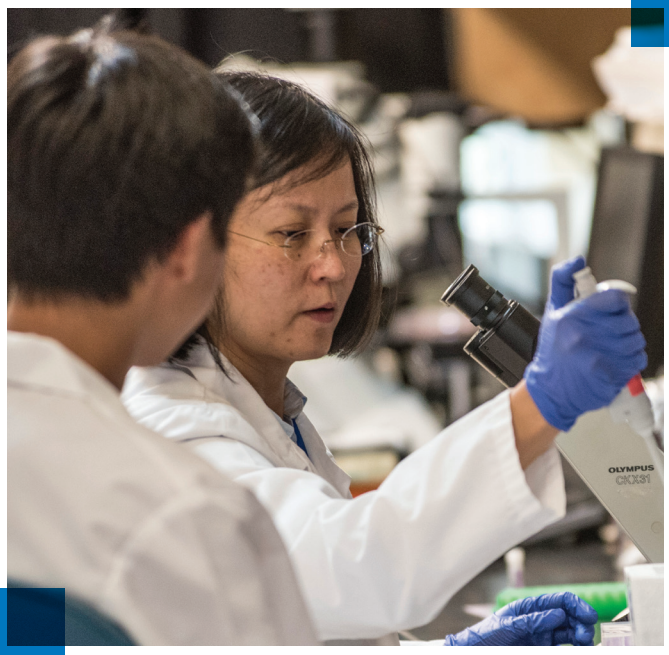
City of Hope®





FROM RESEARCH TO BEDSIDE: TRANSLATION MEDICINE — GMP FACILITIES

Clinical trials test new drugs and therapies in patients. Therapeutics must be manufactured in accordance to current good manufacturing practice (cGMP) standards before physician-scientists can conduct clinical trials. Since 2000, City of Hope has had on-campus cGMP manufacturing capabilities to produce biologically-based therapeutics and conduct first in-human clinical trials of its own agents.

Today, the nonprofit has three on-campus manufacturing facilities that produce both biologic and chemical compounds to cGMP standards. It also has an on-campus retail and sterile compounding licensed radiopharmacy to provide radiopharmaceuticals, related supplies, and services to City of Hope's research and clinical community.

Finally, City of Hope has an on-campus mass spectrometry core that ensures the quality and uniformity of products.

The institution's Cellular Therapy Production Center, which manufactures CAR T cell therapies, is located next to City of Hope Helford Clinical Research Hospital. This proximity to patients enables City of Hope to move new therapies quickly and economically from the research lab to the patient's bedside, turning breakthrough discoveries into lifesaving therapies.

GMP MANUFACTURING FACILITIES AT CITY OF HOPE

Three City of Hope GMP facilities support process research, development and early clinical manufacturing.

CHEMICAL GMP SYNTHESIS FACILITY

- Opened in 2012
- Small molecules
- Oligonucleotides
- Drug discovery

CENTER FOR BIOMEDICINE & GENETICS

- Opened in 2000
- Lentiviral production
- Stem cell products
- Monoclonal antibodies
- Centralized manufacture

CELLULAR THERAPY PRODUCTION CENTER

- Completion date: 2012
- CAR T therapies
- Genetically modified hematopoietic stem cells
- Islet cells
- User-driven manufacture

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