CTTC
Center for Technology Transfer
& Commercialization

Vanderbilt Vaccine Center

ANTIBODY PIPELINE

About the Vanderbilt Vaccine Center

James E. Crowe, Jr., MD leads the Vanderbilt Vaccine Center, which has specialized expertise in isolating fully human, naturally occurring antibodies to human diseases. These antibodies can be used as therapeutics, prophylactic therapeutics, for vaccine development or vaccine quality control reagents, or in diagnostics. Moreover, these naturally occurring antibodies serve as templates to be optimized and engineered for improved characteristics. The Vanderbilt Vaccine Center specializes in research related to biodefense and emerging infectious diseases.

For more information:

Vanderbilt Vaccine Center News and Information

Get to know Dr. Crowe via his TEDx talk

The Vanderbilt Vaccine Center Twitter/X

Antibody Pipeline Key

Vx Available for development of vaccines

Dx Available for development of diagnostics

Tx Available for development of therapeutics

PRV FDA priority review voucher eligible disease

FILOVIRIDAE

Ebola (ebolavirus EBOV, BDBV)

Vx Dx Tx

PRV

- Targets: GP
- Portfolio of specific and cross-reactive filovirus antibodies

Marburg (marburgvirus MARV)

Vx Dx

PRV

- Targets: GP
- Portfolio of specific and cross-reactive filovirus antibodies

"Pan-Ebola" (for Ebola, Sudan, and Bundibugyo viruses)

Vx Dx Tx

PRV

- Targets: intact or receptor binding-competent GP
- Neutralizes a diverse set of ebolaviruses

PLASMODIUM

Malaria mAbs

Vx Dx Tx

PRV

- Targets: VAR2CSA

FLAVIVIRIDAE

Dengue Virus (flavivirus DENV)

Vx Dx Tx

PRV

- Targets: virion, E, prM proteins
- Neutralizing antibodies specific to serotypes 1, 2, 3, and 4.
  Tools for vaccine design

Hepatitis C Virus (hepacivirus HCV)

Vx Dx Tx

- Targets: E1/2 proteins
- Broadly neutralizing antibodies recognize conserved epitope.
  Viral antigens for vaccines

Japanese Encephalitis Virus (flavivirus JEV)

Vx Dx Tx

- Targets: E protein
- Neutralizing antibodies to multiple genotypes, including GIII

West Nile Virus (flavivirus WNV)

Vx Dx Tx

- Targets: E protein domain II

Zika Virus (flavivirus ZIKV)

Vx Dx Tx

PRV

- Targets: E, NS-1 proteins
- Collection of antibodies to different epitopes for vaccine characterization

HIV/HCV Dual-specific Antibodies

Vx Dx Tx

- Targets: Env

ORTHOMYXOVIRIDAE

Influenza (influenzavirus A and B)

Vx Dx Tx

- Targets: HA: Type A&B, H1, H2, H3, H3v, H5, H7, H17, H18
- Large collection includes antibodies cross-reactive to multiple HA subtypes, broad H3 antibodies and those specific to unusual variants

PNEUMOVIRIDAE

Respiratory Syncytial Virus (orthopneumovirus RSV)

Vx Dx Tx

- Targets: : F, pre-fusion F, antigenic site IV on pre- and post-fusion F, G proteins
- Neutralizing antibodies specific to the pre-fusion F protein may be particularly promising as therapeutics. Neutralizing antibodies cross-reactive to RSV and MPV available. Useful tools for rational vaccine design

Metapneumovirus (metapneumovirus HMPV)

Vx Dx

PRV

- Targets: F, antigenic site IV on pre– and post-fusion F

TOGOVIRIDAE*

Chikungunya Virus (alphavirus CHIKV)

Vx Dx

- Targets: E1/E2 proteins

Ross River Virus (alphavirus RRV)

Vx Dx Tx

- Targets: E2 protein, A and/or B domains

Mayaro Virus (alphavirus)

Vx Dx Tx

- Targets: E2 protein

*Cross-reactive antibodies to the above three alphavirus are available

Equine Encephalitic Viruses**
(EEEV, VEEV, and WEEV alphaviruses)

Vx Dx Tx

- Targets: E2 protein

**cross-reactive antibodies to EEEV, VEEV, WEEV are available

RETROVIRIDAE

Design and Development of Empirical and Rational Epitope-Focused HIV-1 Vaccine Candidates

Vx Dx Tx

- Targets: ENV

OTHER RNA VIRUSES

Norovirus (norovirus GI and GII)

Vx Dx Tx

- Targets: Neutralizing
- Antibodies to both the GI and GII genogroups are available, block HBGA binding

Rift Valley Fever Virus (phlebovirus RVF)

Vx Dx Tx

- Targets: Neutralizing, Gc or Gn protein

Enterovirus D68 (enterovirus EV-D68)

Vx Dx Tx

PARAMYXOVIRIDAE

Hendra and Nipah Viruses
(henipaviruses HeV and NiV, respectively)

Vx Dx Tx

- Targets: HeV glycoprotein

HPIV3 Neutralizing Antibodies

Vx Dx Tx

- Targets: F

DNA VIRUSES

Poxvirus (monkey pox, small cow pox, variola, vaccinia)

Vx Dx Tx

- Targets: Neutralizing, multiple virus surface proteins
- Cross-neutralizing antibodies, antibody combinations protective post-exposure in animal models

CORONAVIRIDAE

Pediatric mAbs

Vx Dx Tx

- Targets: All tested (tested up to XBB.1.5)
- Some neutralize both SARS2 and SARS1

Cross-reactive COVID-19 (SARS-CoV-1 derived) Antibodies (SET 1)

Vx Dx Tx

- Targets: SARS2 index, SARS1
- Non-neutralizing antibodies with Fc effector functions

SARS-CoV-2 Antibodies

Vx Dx Tx

- Targets: Varying; some XBB.1.5
- Some neutralize both SARS2 and SARS1

BACTERIA

Erlichia chafeensis

Vx Dx Tx

- Targets: Multiple

Staphylococcus aureus

Vx Dx Tx

- Targets: Toxin Luk A/B, Isd proteins
- Antibodies may be useful for sepsis

MISCELLANEOUS

Therapeutic Antibodies for Treating Lung Cancer (Oncologic)

Vx Dx Tx

- Targets: VEGF

C. Difficile mAbs (C. Difficile)

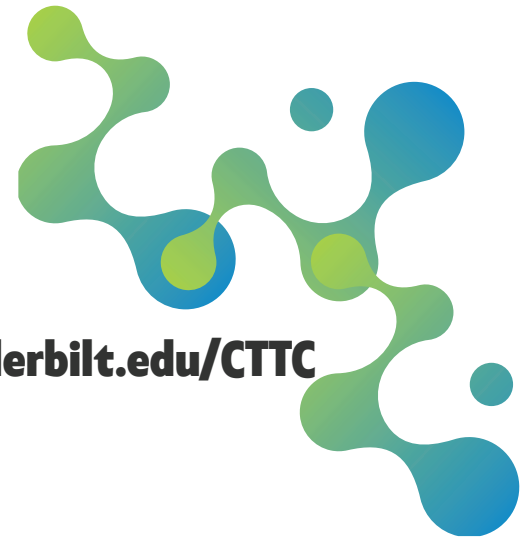
Vx Dx Tx

- Targets: Multiple antigens from C. Diff

Norovirus mAbs (Caliciviridae)

Vx Dx Tx

- Targets: P



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