

Understanding cancer immunotherapy with genomics

Get a complete view of cancer and immune system biology to guide your journey in immuno-oncology research

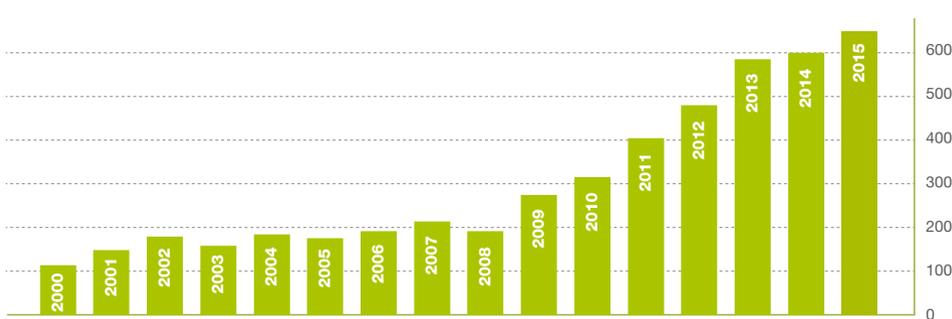
Immunotherapies have shown incredible promise as a form of cancer treatment



Source: Le et al. *N Engl J Med.* 2015;372:2509-2520.

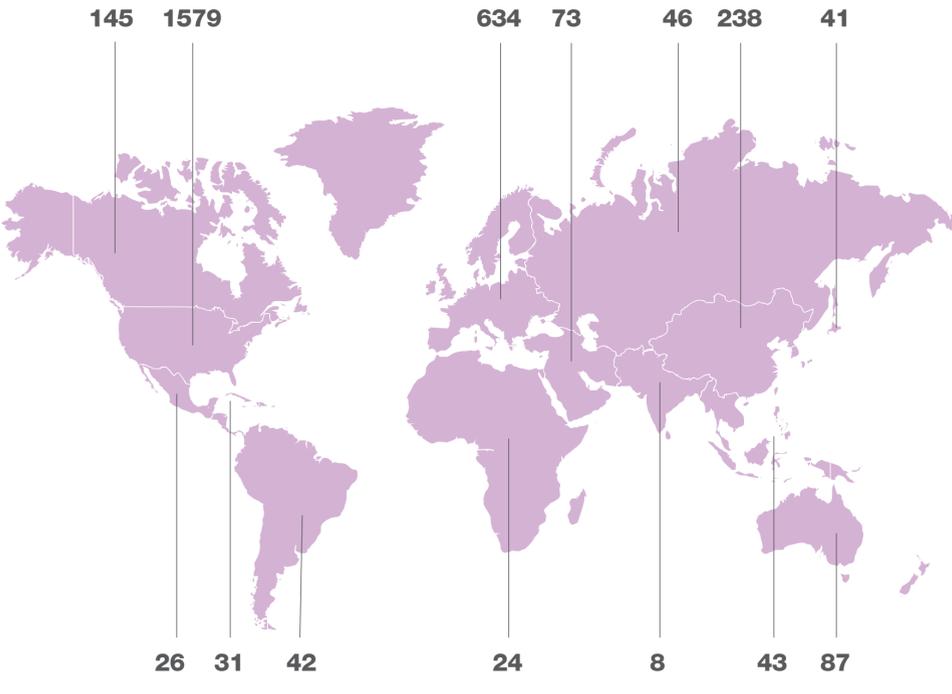
Interest in immunotherapy research has been growing

Publications in immunotherapy by year since 2000.



Source: Thompson Reuters ISI Web of Science (search: immune+cancer+sequencing+clinical from 2000-2016).

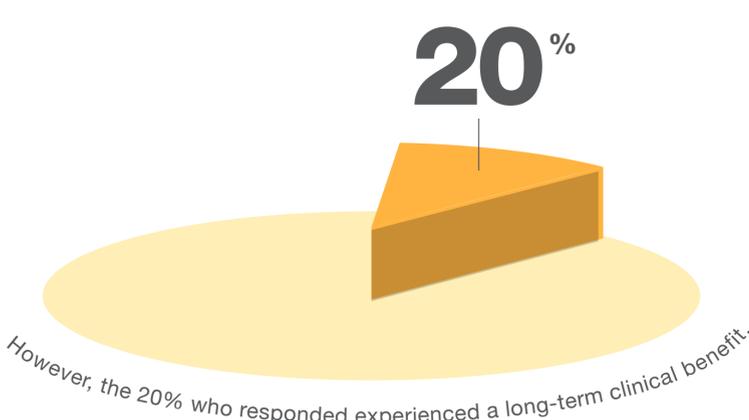
Today there are over 2,000 open clinical trial sites studying immunotherapy for cancer



Source: https://clinicaltrials.gov/ct2/results/map?term=immune+and+cancer&recr=Open&no_unk=Y.

But the data often reveal variability in patient responses

A study of a CTLA4 blockade via the mAb ipilimumab yielded a response rate of only 20%.



Source: Van Allen et al. *Science.* 2015;350(6257):207-211.

So how can we determine which therapy will yield a favorable response in a given patient?



Clinical studies of exceptional responders...have highlighted NRAS mutation status, total neoantigen load, and a neoantigen-derived tetrapeptide signature as possible correlates of response to ipilimumab in metastatic melanoma.

VanAllen et al, 2015



24 samples, 1 run Thousands of genes

NGS enables a comprehensive assessment of neoantigens and gene expression signatures to identify biomarkers for immunomodulatory therapies.

NGS



IHC analysis



8 samples
1 gene

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