nature portfolio

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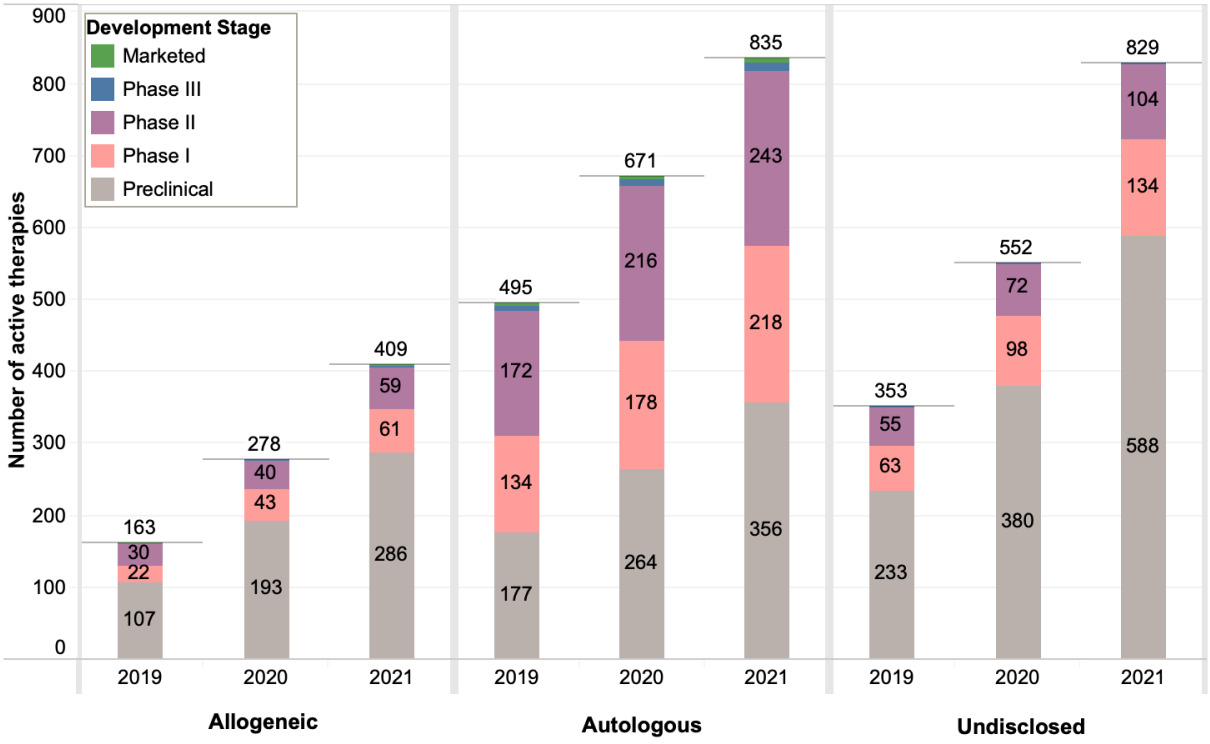
Supplementary information

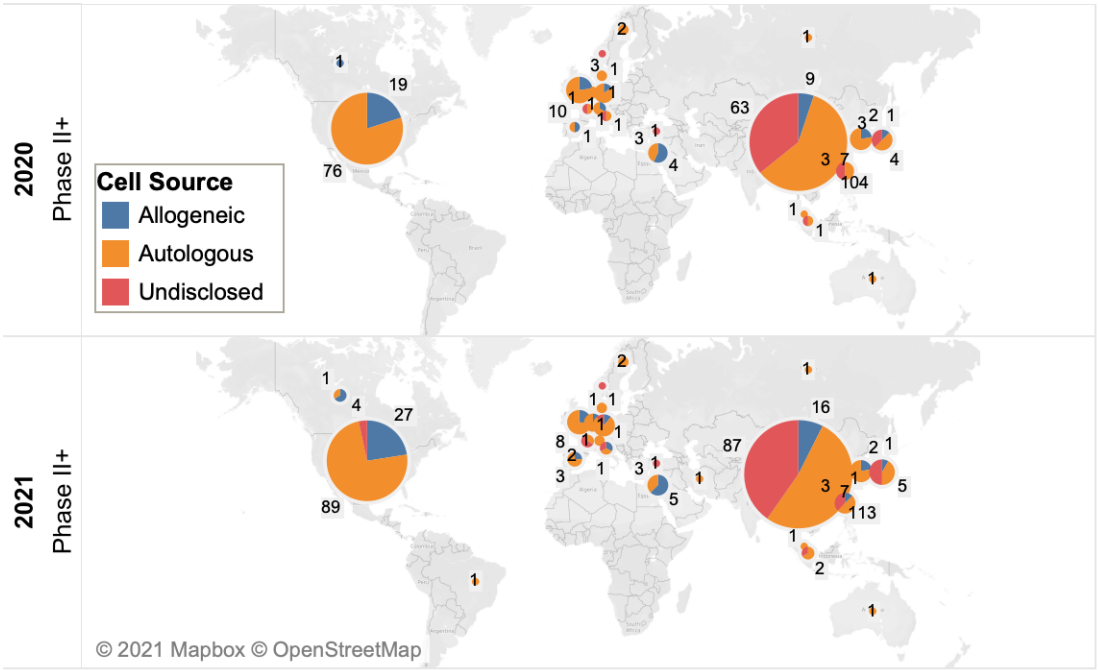
The clinical pipeline for cancer cell therapies

In the format provided by the authors

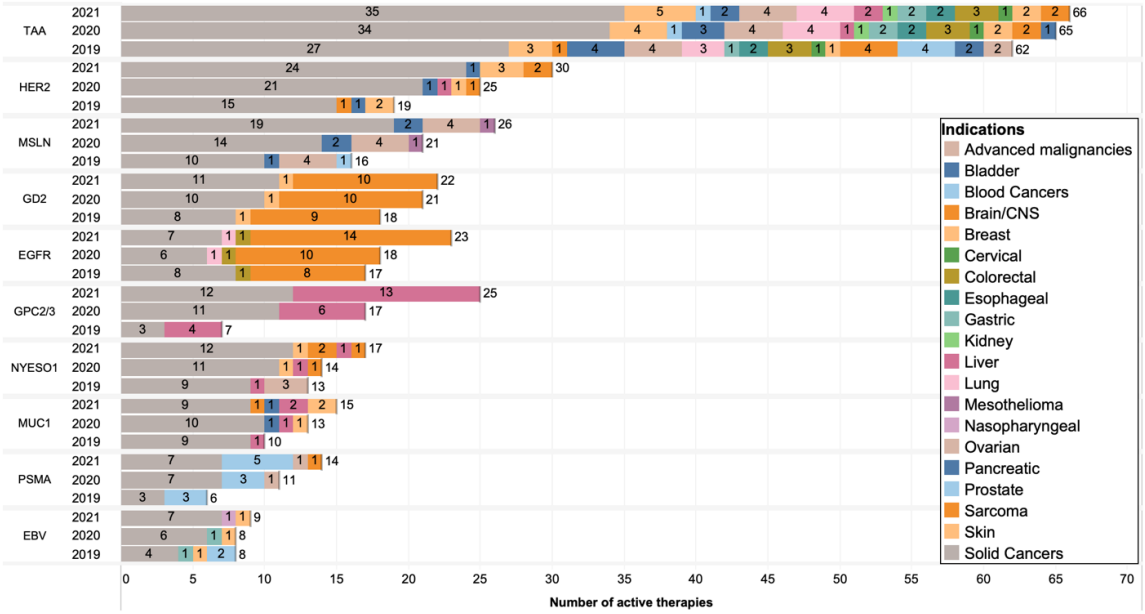
Supplementary Figures



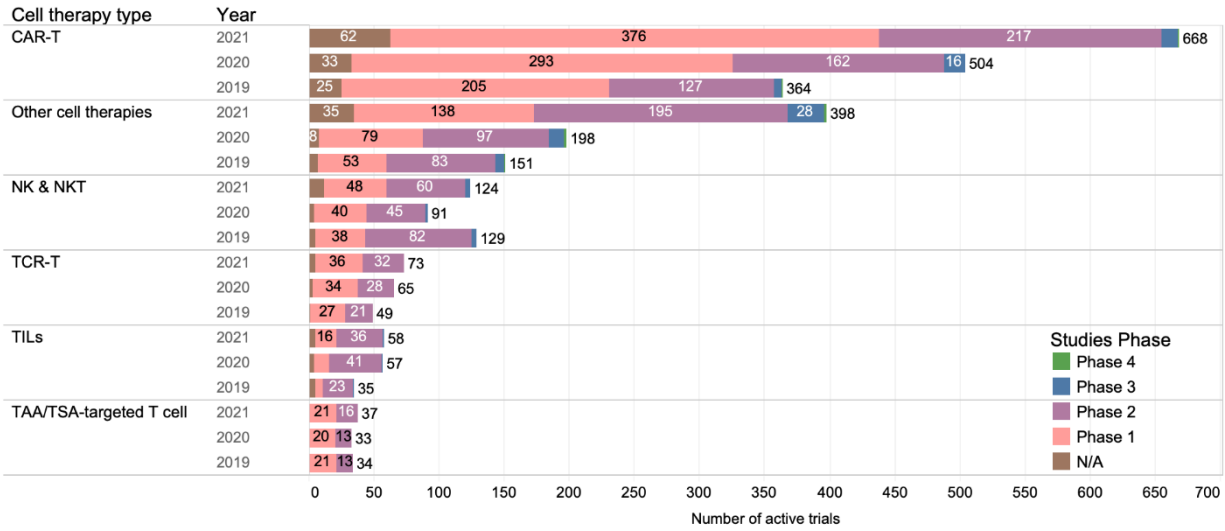
Supplementary Fig. 1. Comparison of cell therapies in different development stages from 2019 to 2021.



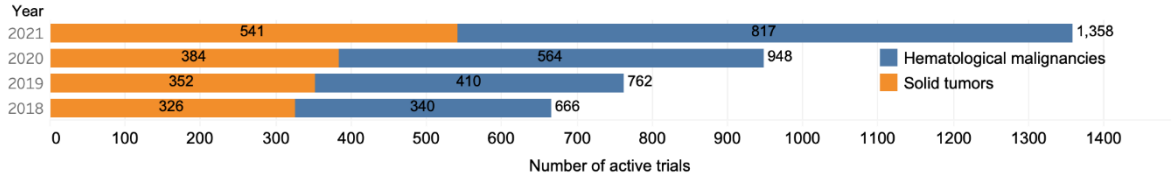
Supplementary Fig. 2. Global pipeline of cell therapy agents in phases II, III, and marketed. Colours show different cell sources and numbers represent total active therapies within each category.



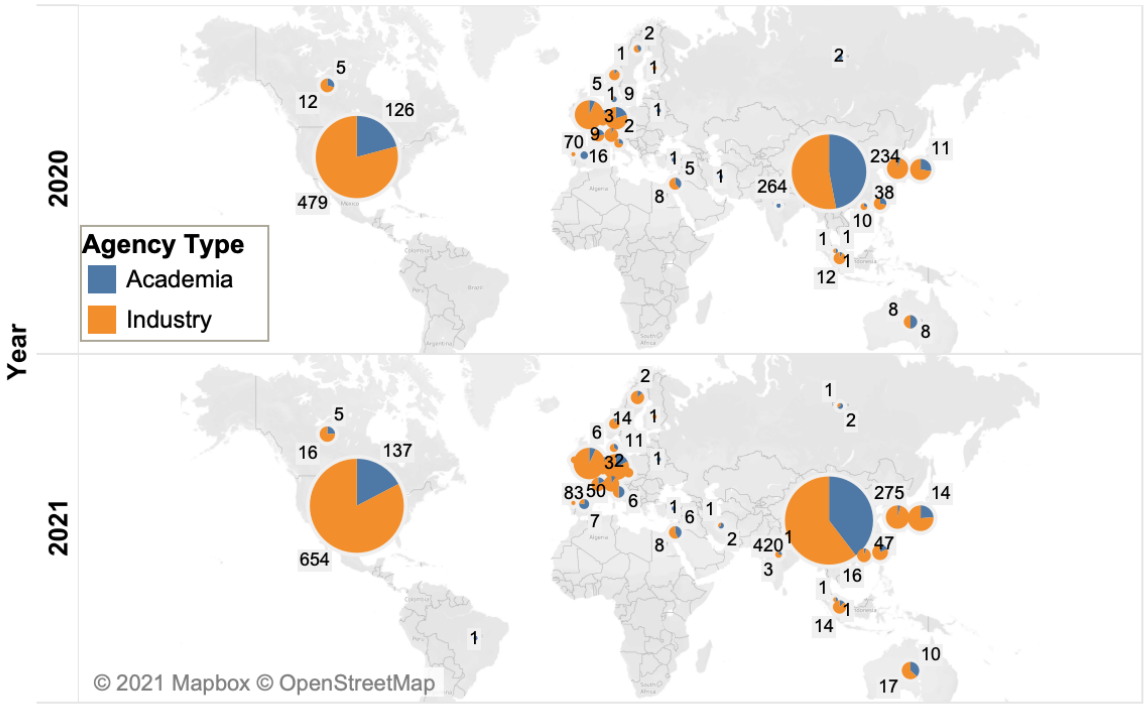
Supplementary Fig. 3. Top ten targets in various solid tumour indications.



Supplementary Fig. 4. Comparison of active cell therapy trial landscape in 2019, 2020, and 2021. All were mined similarly with 1-year differences in data pull date to ease comparison.



Supplementary Fig. 5. Comparison of active cell therapies in haematological malignancies and solid tumours indications during the past four years.



Supplementary Fig. 6. Global distribution of cell therapy agents stratified by sponsor (academia versus industry)

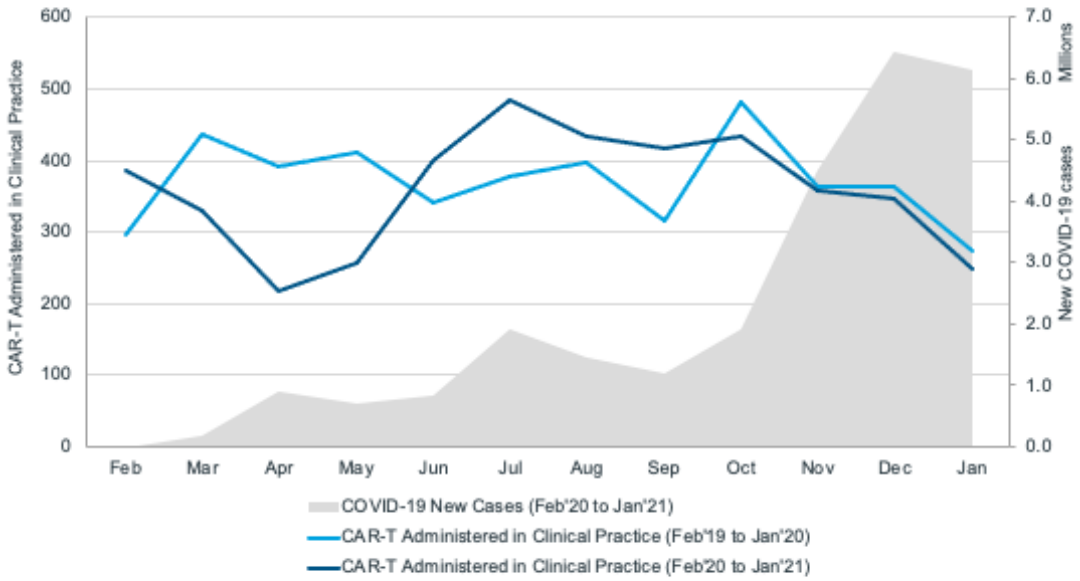


Figure S7: Number of CAR-T cell therapies administered in US clinical practice for the periods 2019-20 and 2020-21 (Feb to Jan) (left y-axis) tracked along with COVID-19 cases (right y-axis) from Johns Hopkins University COVID-19 database.

Supplementary Table 1: Select Solid tumour cell therapy results

Drug Name	Indication	Select Efficacy	Trial
RTX-240	Solid Tumours	1 cPR, 1 uPR, 6 SD	NCT04372706
LN-145	HNSCC	44% ORR with pembrolizumab	NCT03645928
CART-EGFR	NSCLC	18% PR, 45% SD 11 pts	NCT01869166
EBV specific CTLs	Neuroblastoma	3 out of 11 pts CRs when induced with active disease	NCT00085930
1RG-CART	Neuroblastoma	3 out of 12 pts demonstrated regression of soft tissue and bone marrow disease	NCT02761915
cPR, clinical partial response; HNSCC, head and neck squamous cell carcinoma; NSCLC, non-small cell lung cancer; ORR, objective response rate; SD, stable disease; uPR, unconfirmed partial response			

Supplementary Methods

Dataset and analysis

The data on cellular immunotherapy agents were collected from GlobalData's Drugs Database and subsequently curated by Cancer Research Institute (CRI) based on CRI IO Analytics definition of different cellular immunotherapy types and drug target information. Cellular immunotherapies were classified into seven categories based on the different mechanisms of action: (1) CAR-T, (2) T cell receptor (TCR), (3) autologous circulating T cells targeting an unspecified tumour-associated antigen (TAA) or a tumour-specific antigen (TSA), (4) tumour-infiltrating lymphocytes (TIL), (5) T cellular immunotherapies based on new technologies (such as induced pluripotent stem cells (iPSCs), CRISPR or γδT cells), (6) cellular immunotherapies derived from natural killer (NK) or NKT cells, and (7) therapies derived from other cell types (other cellular immunotherapy, such as macrophages or stem cells). The cellular immunotherapies that qualify as cancer vaccines were excluded from this analysis. The clinical trial data were obtained from clinicaltrials.gov. The trials investigating cellular immunotherapies consistent with CRI IO Analytics definition were subsequently analysed. The data were extracted in April 2020, and the analyses were done by using PostgreSQL and Tableau. Real world data on the clinical use of CAR-T cells was obtained from IQVIA proprietary database which contained US medical and prescription claims databases from 110 million patients, 76% of which were obtained from private insurance claims, 21% from Medicare claims and 4% from Medicaid claims.