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Antibodies in Biotechnology

Developing Monoclonal Antibodies
Against Tetraspanin Proteins

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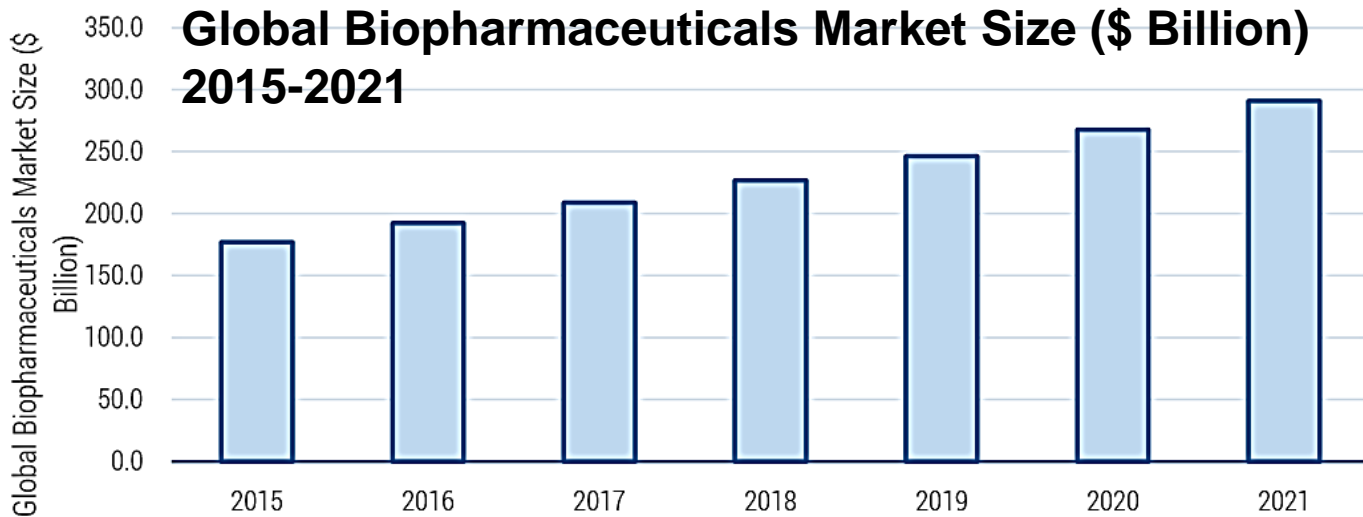
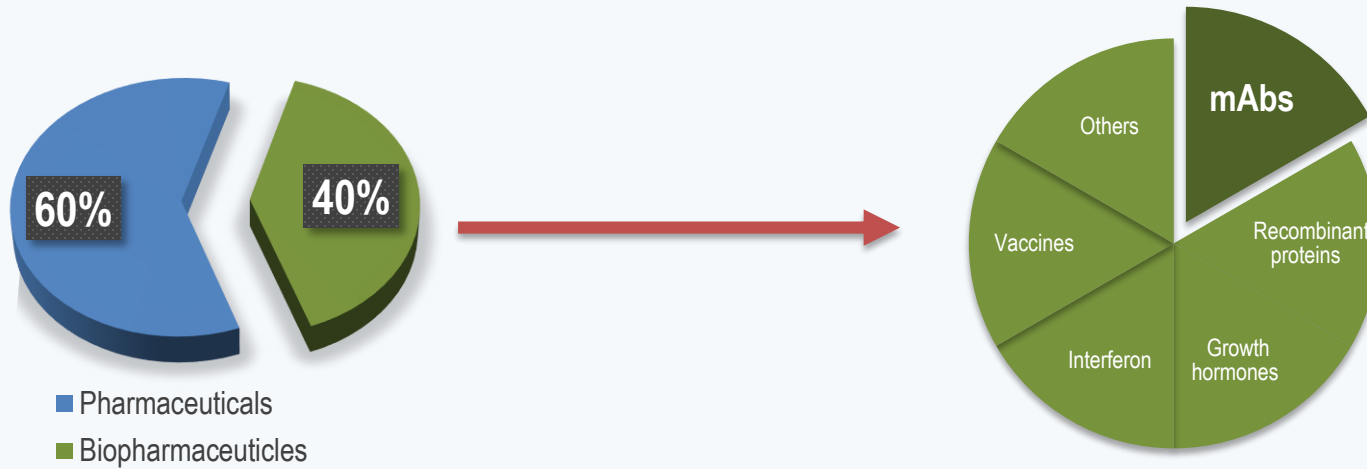
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Content

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Overview



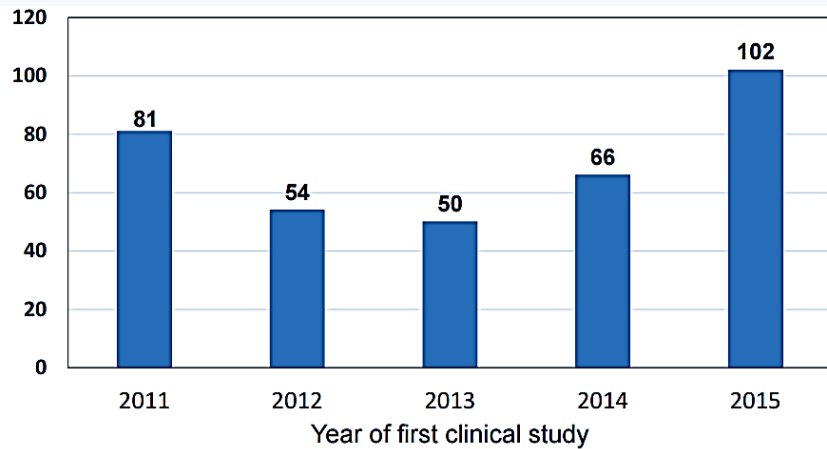
Spadiut, O et al., *Trends in Biotechnology*, 2014

Persistence Market Research, *Global Market Study on Biopharmaceuticals*, accessed August 2016

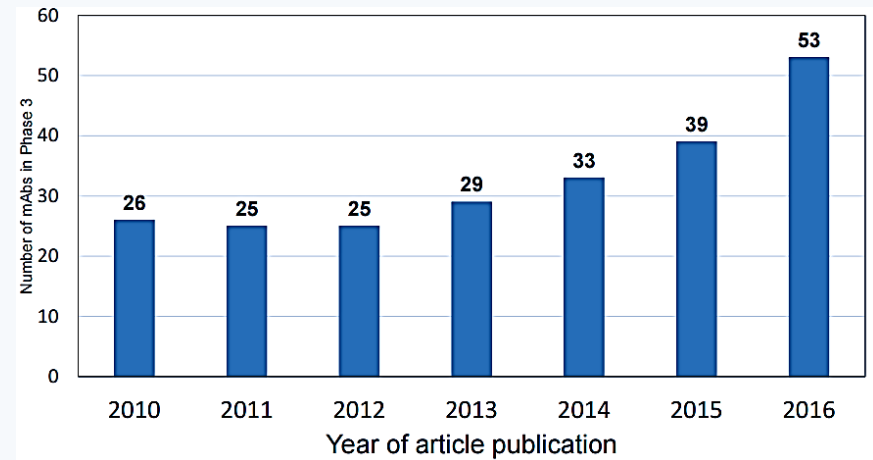
Mordor Intelligence; mordorintelligence.com, 2016

Novel Antibodies Progress and Development

Novel Antibodies introduced to clinic



Antibodies in Phase 3 studies

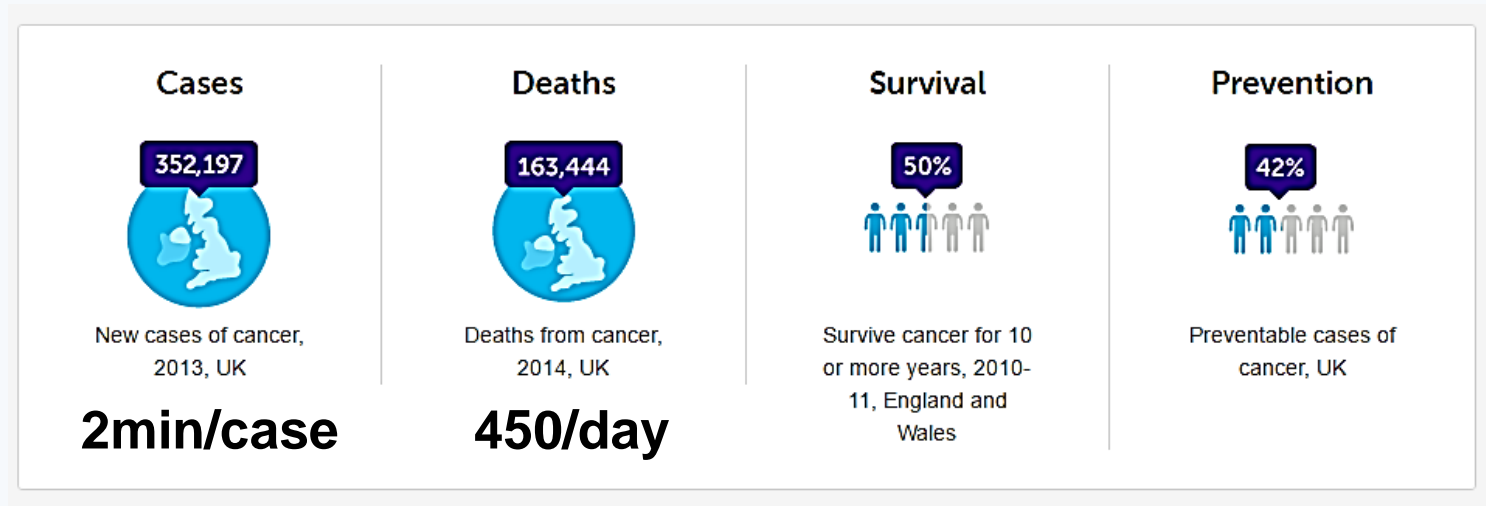


The Antibody Society, 2016

Janice M. Reichert, Antibodies to watch in 2016, mAbs, 2016

Janice M. Reichert, Antibodies to watch in 2015, mAbs 2015

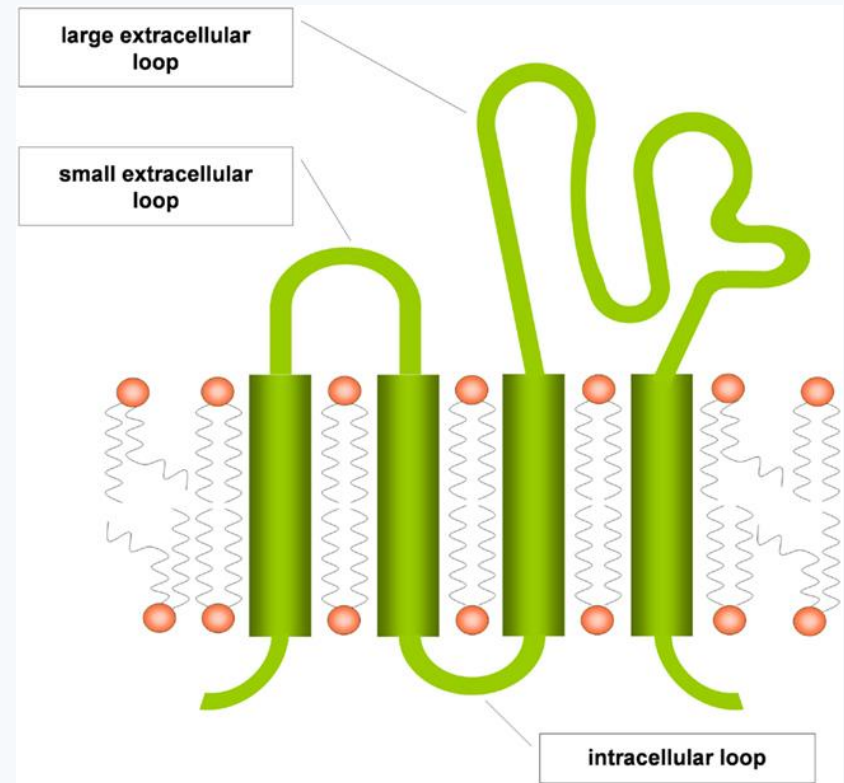
Cancer Statistics for the UK



>5th of all cancer deaths are from lung cancer

Tetraspanin proteins

- 33 members in human
- Widely expressed in different tissue types
- Involved in health and disease
- Tetraspanin2 (Tspan2) is differentially expressed in human lung cancer



Martin K. et al. Front. Immunol., 2012

Martin Hemler, Nature reviews Mol. Cell biology, 2003

Martin Hemler, Nature reviews Cancer, 2013

Methodology

Balb/c mice



Immunisation using NS0TS2 cells

Three immunisations interval, and test-bleeds

Selecting of the highest reactivity against the recombinant Tspan2

Splenocyte isolation and fusion

Fusion of spleno-lymphocyte with Sp2 myeloma cell line

Hybridoma, and screening for Abs producing cells

Selecting the single cell-colony producing the specific mAb.

Large-scale production of specific mAb

Protein-G Chromatography

Anti-Tpsan2 mAbs



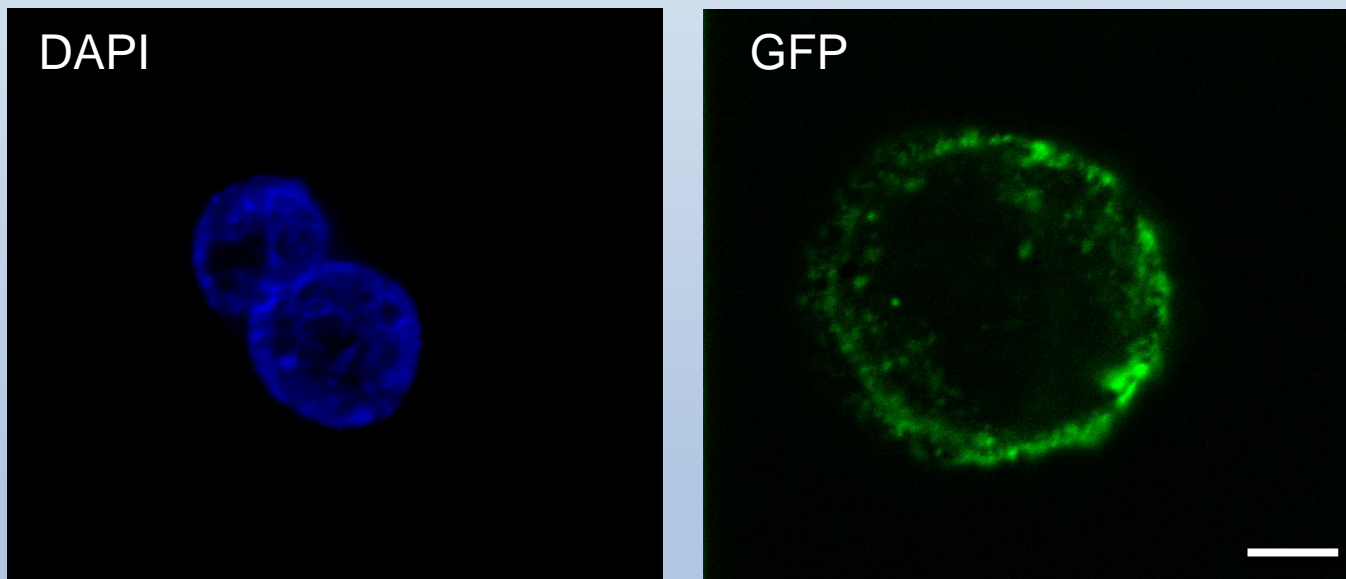
Yaseen et al. unpublished data

How to avoid on-target off-tumour toxicity?

Careful target validation

Results

Tspan2 is mainly localised on the cell surface

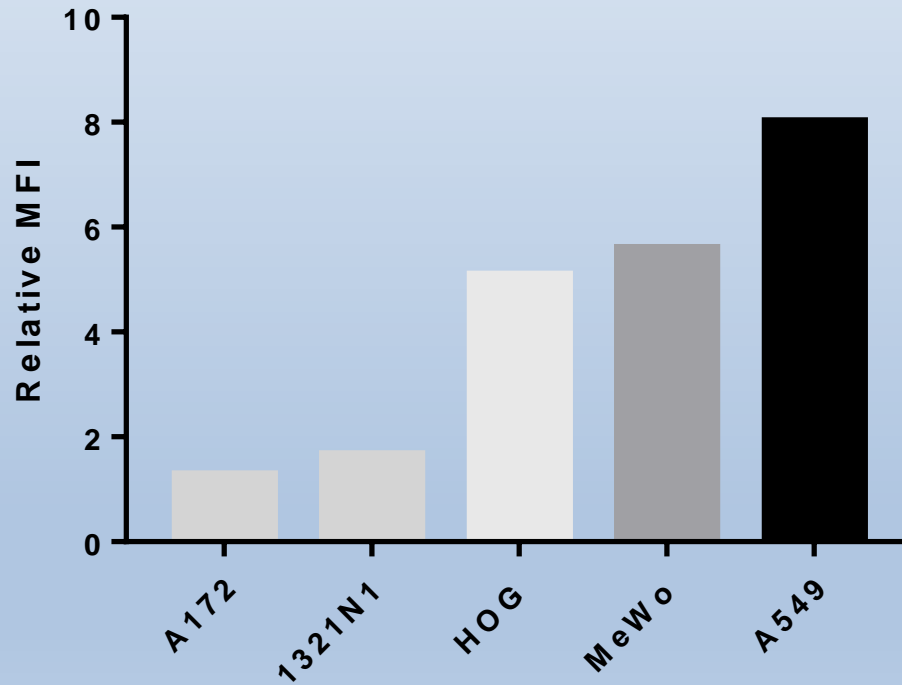


Confocal images; bar 5um

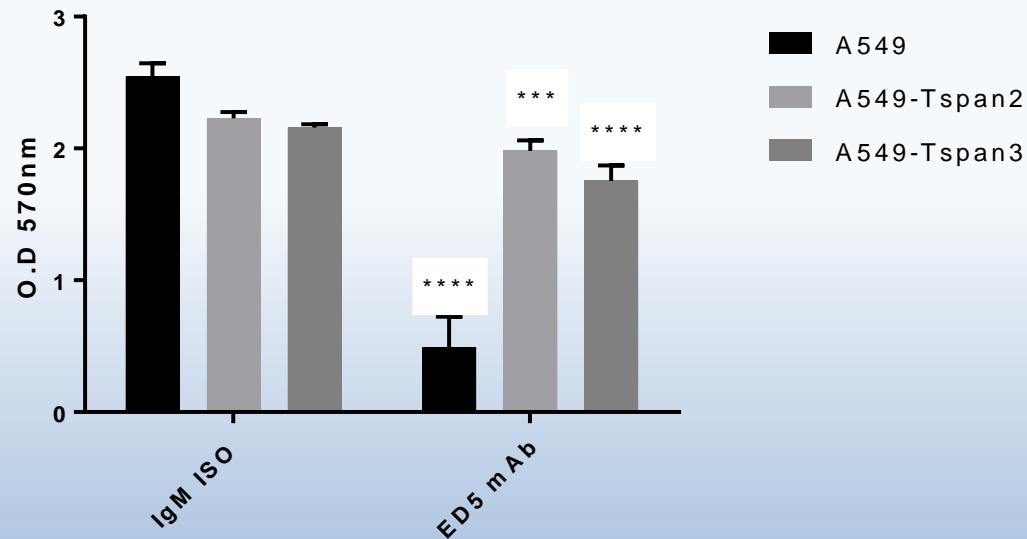
Yaseen et al. unpublished data

Overexpression of Tspan2 detected in human lung cancer cell line

Tspan2 expression levels



Anti-Tspan2 mAb significantly decreases the human lung cancer cell adhesion



Conclusions

- Tetraspanin proteins represent a novel target for disease targeting
- Tspan2 is localised on the cell surface
- Tspan2 is overexpressed in human lung cancer
- Novel anti-Tspan2 mAb bind against the native form of Tspan2 and decreases the adhesion of human lung cancer cell line.

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Thank you