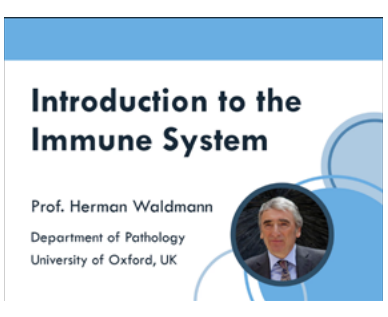
From Native Lymphocytes to CAR-T Therapy

A Learning Journey

A brief introduction to key concepts in Chimeric antigen receptor T cell therapy, from the role of T cells in the immune system and the mechanisms by which they exert their function, through the characteristics of T cell receptors, to the basics of CAR-T technology, its application and its current challenges.

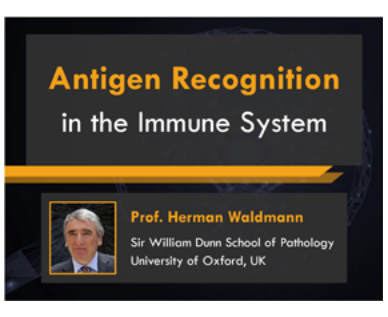
An introduction to Lymphocytes



Extract from:
'Introduction to the immune system'
Prof. Herman Waldmann – University of Oxford, UK

Slides 16-25 (07:40)

Antigen recognition by T-cell receptors



Extract from:
'Antigen recognition in the immune system'
Prof. Herman Waldmann – University of Oxford, UK

Slides 30-33 (02:21)

An introduction to immunoreceptors

Extract from:
'Immunoreceptors'
Prof. Anton van der Merwe – University of Oxford, UK

Slides 3-7 (03:41)

T-cell receptors (TCRs)

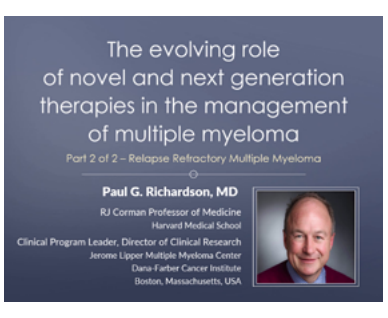
Extract from:
'Immunoreceptors'
Prof. Anton van der Merwe – University of Oxford, UK

Slides 11-16 (06:44)

CAR-T for cancer treatment

Extract from:
'Mode of action of T cells engineered with CAR or TCR for cancer treatment'
Prof. Sebastian Kobold – Ludwig-Maximilians-Universität München, Germany
Slides 1-7 (10:28)

CAR-T for the treatment of relapse refractory multiple myeloma

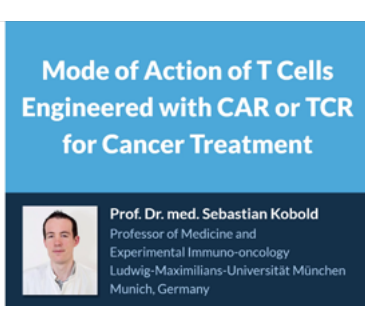


Extract from:
'The evolving role of novel and next generation therapies in the management of multiple myeloma: relapse refractory multiple myeloma Part 2'
Prof. Paul G. Richardson – Harvard, USA
Slides 44-48 (01:04)

Some issues associated with CAR-T cell therapies

Extract from:
'Mode of action of T cells engineered with CAR or TCR for cancer treatment'
Prof. Sebastian Kobold – Ludwig-Maximilians-Universität München, Germany
Slide 18 (03:44)

Challenges in applying CAR-T therapies to solid tumours



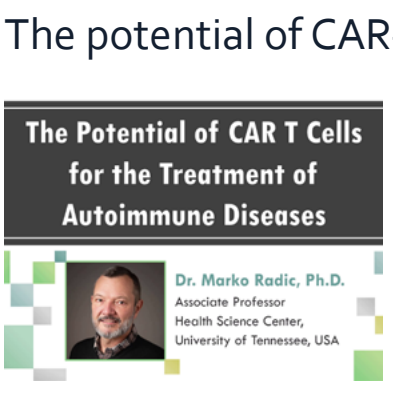
Extract from:
'Mode of action of T cells engineered with CAR or TCR for cancer treatment'
Prof. Sebastian Kobold – Ludwig-Maximilians-Universität München, Germany
Slides 19-21 (07:23)

More on the challenge of recruiting CAR-T cells to solid tumours

Extract from:
'Lymphocyte homing: getting lymphocytes to the right place at the right time'
Prof. Ann Ager – Cardiff University, UK

Slides 24-26 (05:11)

The potential of CAR-T therapy for autoimmune diseases



Extract from:
'The potential of CAR T cells for the treatment of autoimmune diseases'
Dr. Marko Radic – University of Tennessee, USA

Slides 3-11 (19:15)

Recommended Reading

Reviews on CAR-T:

- Determinants of response and resistance to CAR T cell therapy; Lesch et al., Semin Cancer Biol. 2020 Oct; 65:80-90. https://doi.org/10.1016/j.semcancer.2019.11.004
- Teaching an old dog new tricks: next-generation CAR T cells; Tokarew et al., Br J Cancer. 2019 Jan;120(1):26-37. https://doi.org/10.1038/s41416-018-0325-1

Review on CRS and side effects:

- Cytokine release syndrome; Shimabukuro-Vornhagen et al., J Immunother Cancer. 2018 Jun 15;6(1):56. https://doi.org/10.1186/s40425-018-0343-9