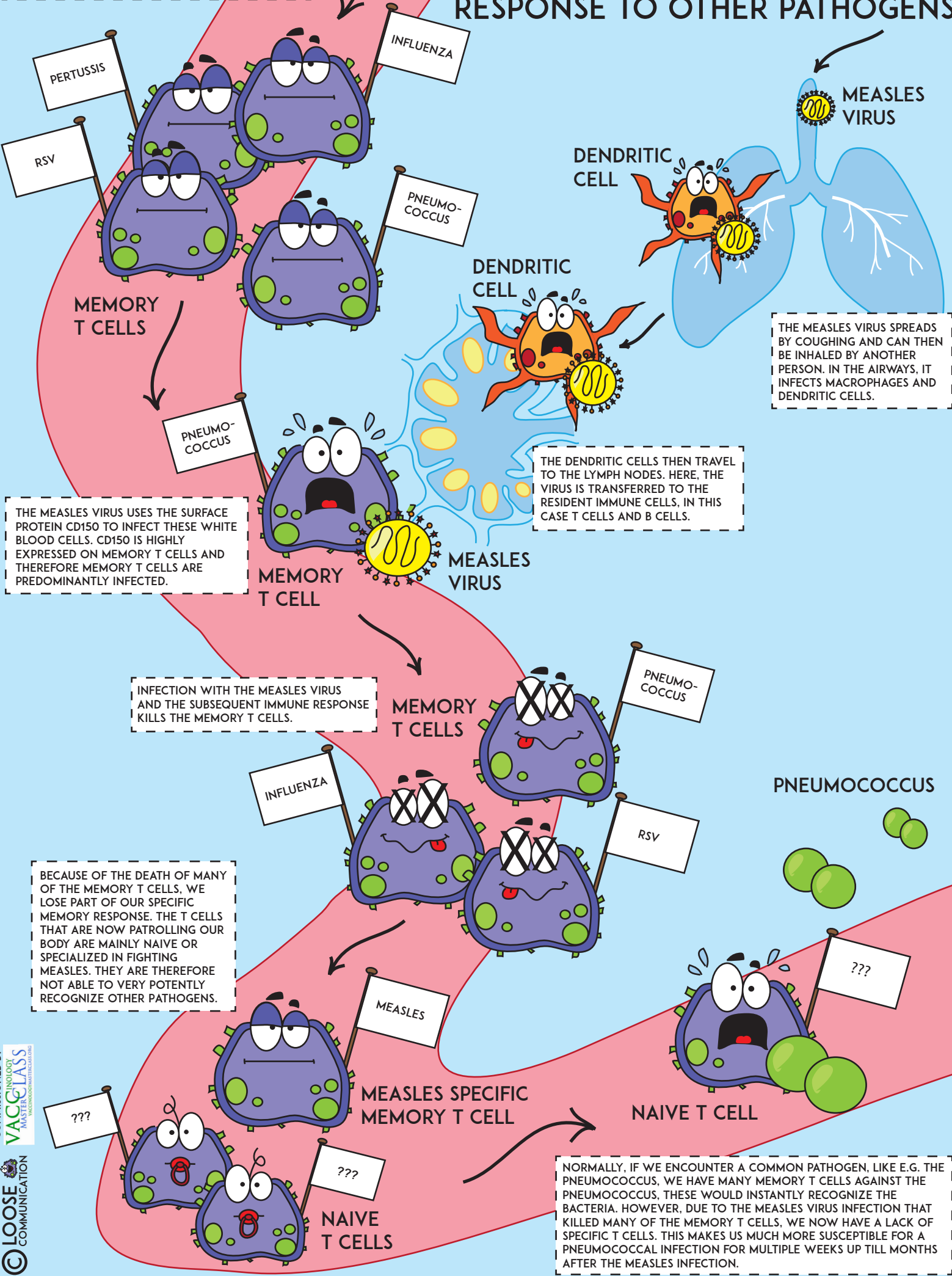


# WHY MEASLES INFECTION REDUCES THE IMMUNE RESPONSE TO OTHER PATHOGENS

WE ALL HAVE MEMORY T CELLS THAT RECOGNIZE PATHOGENS THAT HAVE INFECTED US PREVIOUSLY. THESE MEMORY T CELLS ARE PATROLLING THROUGH OUR BLOOD STREAM AND ARE ALWAYS ON THE LOOK OUT FOR RETURNING INVADERS.



THE MEASLES VIRUS SPREADS BY COUGHING AND CAN THEN BE INHALED BY ANOTHER PERSON. IN THE AIRWAYS, IT INFECTS MACROPHAGES AND DENDRITIC CELLS.

THE DENDRITIC CELLS THEN TRAVEL TO THE LYMPH NODES. HERE, THE VIRUS IS TRANSFERRED TO THE RESIDENT IMMUNE CELLS, IN THIS CASE T CELLS AND B CELLS.

THE MEASLES VIRUS USES THE SURFACE PROTEIN CD150 TO INFECT THESE WHITE BLOOD CELLS. CD150 IS HIGHLY EXPRESSED ON MEMORY T CELLS AND THEREFORE MEMORY T CELLS ARE PREDOMINANTLY INFECTED.

INFECTION WITH THE MEASLES VIRUS AND THE SUBSEQUENT IMMUNE RESPONSE KILLS THE MEMORY T CELLS.

BECAUSE OF THE DEATH OF MANY OF THE MEMORY T CELLS, WE LOSE PART OF OUR SPECIFIC MEMORY RESPONSE. THE T CELLS THAT ARE NOW PATROLLING OUR BODY ARE MAINLY NAIVE OR SPECIALIZED IN FIGHTING MEASLES. THEY ARE THEREFORE NOT ABLE TO VERY POTENTLY RECOGNIZE OTHER PATHOGENS.

NORMALLY, IF WE ENCOUNTER A COMMON PATHOGEN, LIKE E.G. THE PNEUMOCOCCUS, WE HAVE MANY MEMORY T CELLS AGAINST THE PNEUMOCOCCUS, THESE WOULD INSTANTLY RECOGNIZE THE BACTERIA. HOWEVER, DUE TO THE MEASLES VIRUS INFECTION THAT KILLED MANY OF THE MEMORY T CELLS, WE NOW HAVE A LACK OF SPECIFIC T CELLS. THIS MAKES US MUCH MORE SUSCEPTIBLE FOR A PNEUMOCOCCAL INFECTION FOR MULTIPLE WEEKS UP TILL MONTHS AFTER THE MEASLES INFECTION.