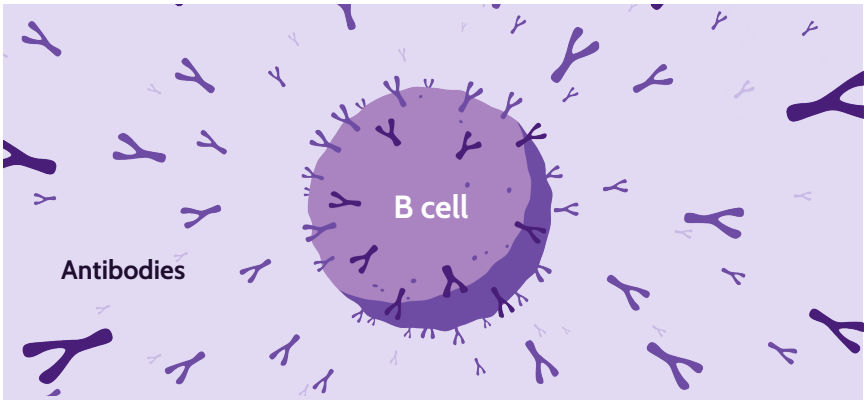
The Role of BAFF and APRIL in B Cell Control

What are diseases with uncontrolled B cells?

A number of autoimmune diseases are driven by uncontrolled B cells (where the immune system isn't doing its job correctly). When the immune system, specifically a type of white blood cell – called B cells – receives the wrong signals from other biological messengers in the body, those B cells can mistakenly attack healthy body tissue, causing inflammation and injury. In the case of **IgA nephropathy (IgAN)**, a serious kidney disease, the attack is on the kidney.



B cells are a key part of our immune system that usually protect us from infections, but sometimes things can go wrong.

Other examples of diseases with uncontrolled B cells include:

Primary membranous nephropathy (pMN),

a rare and serious kidney disease

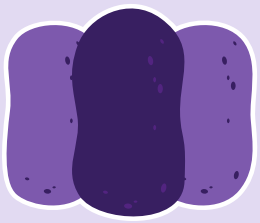
Generalized myasthenia gravis (gMG),

a rare neuromuscular disease

BAFF and APRIL: Key Regulators of B Cells

BAFF

B cell-activating factor

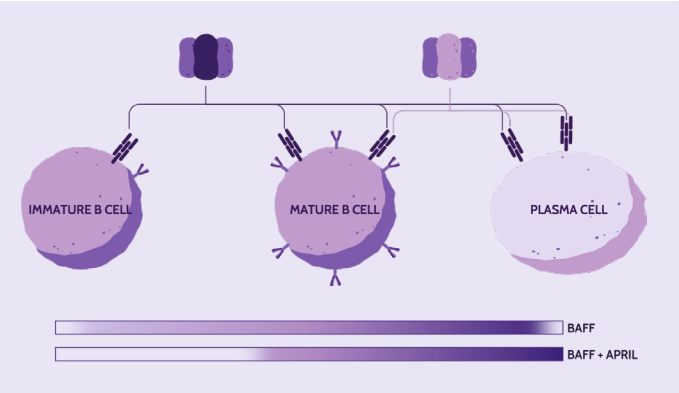


Crucial for the development and maintenance of early to more mature B cells.

APRIL

A proliferation-inducing ligand

Promotes the survival of more mature B cells to antibody-producing plasma cells.



Two key signaling molecules (these are small proteins referred to as “cytokines”) called “BAFF” (B cell-activating factor) and “APRIL” (a proliferation-inducing ligand), play fundamental and distinct roles in the development, differentiation and function of B cells by binding to receptors on the surface of B cells. Through their effects on the B cell lifecycle, BAFF and APRIL play key roles in B cell regulation.

In some diseases with uncontrolled B cells, levels of BAFF and APRIL are elevated and may lead to overactive or long-lived B cells that produce harmful autoantibodies. These elevated levels of both BAFF and APRIL may be linked to more severe disease activity.

Addressing BAFF and APRIL to Treat Serious Diseases

Targeting the underlying cause of some autoimmune diseases – specifically, the uncontrolled B cells driven by elevated levels of BAFF and APRIL – is currently being investigated in clinical trials.

Importantly, because both BAFF and APRIL play a role in B cell control/regulation, there is a need to cast the widest net to optimally target the causal biology of disease. Emerging research suggests that dual blockade of BAFF and APRIL may address the root cause of multiple diseases with uncontrolled B cells, including kidney diseases like IgAN and pMN.

At Vertex, we are committed to helping address unmet needs for people affected by serious diseases with uncontrolled B cells. Learn more at vrtx.com.