Interactive Questions

Question 1:

Which of the following is not characteristic of all autoimmune blistering diseases?

- blisters on the skin and/or mucous membranes
- IgG auto-antibodies

Explanation:

Autoimmune blistering diseases share the common feature of a loss of tolerance against self-antigens leading to generation of auto-antibodies targeting different disease-specific auto-antigens in the human skin that cause painful blisters to develop on the skin and/or mucous membranes. Although IgG auto-antibodies are present in pemphigus vulgaris, bullous pemphigoid, and epidermolysis bullosa acquisita this observation is not a common feature of all autoimmune blistering diseases since in dermatitis herpetiformis IgA auto-antibodies are the cause for disease.

- auto-antibodies against auto-antigens in the skin
- loss of self-tolerance

Question 2:

Which knockout mice are immunized with auto-antigen in the active disease model of pemphigus vulgaris?

- Dsg1-/- mice
- COL7-/- mice
- Dsg3-/- mice

Explanation:

The active disease model for pemphigus vulgaris (PV) uses desmoglein 3 (Dsg3-/-)
mice that lack an established self-tolerance against Dsg3 (the major antigen in PV). Isolated splenocytes from Dsg3-immunized or naive Dsg3-/- mice are transferred into recombinant activating gene 2 (Rag-2/-) immunodeficient mice that do express Dsg3 to induce a Dsg3-specific autoimmune response. This model allows the stable production of a panel of Dsg3-specific auto-antibodies that bind to Dsg3 in vivo and can induce a PV phenotype in mice.

Dsg2/- mice

**Question 3:**

Which domain of type VII collagen is used for the immunization-induced model for epidermolysis bullosa acquisita?

**NC1**

**Explanation:**

The non-collagenous (NC) 1 domain of type VII collagen contains the major antigenic epitopes for epidermolysis bullosa acquisita (EBA) and the majority of EBA sera recognizes the NC1 domain. Therefore immunization with NC1 is used in the active mouse model for EBA.

NC2

NC3

NC4

**Question 4:**

What is/are the main auto-antigen(s) in bullous pemphigoid?

COL17/BP180

BP230

COL17/BP180 and BP230
**Explanation:**

Bullous pemphigoid (BP) is a subepidermal blistering disease characterized by auto-antibodies against antigens in the epidermal basement membrane (BM), mainly type XVII collagen (COL17)/BP180 (BP antigen of 180 kDa) and the intracellular plakin BP230. In an active mouse model for BP skin grafts from transgenic mice expressing human COL17 in the murine BM are used for immunization of wildtype recipients in order to induce a strong COL17-specific IgG response with auto-antibodies that are able to induce subepidermal blister formation.

**COL17/BP180 and BP250**

**Question 5:**

Which Dsg3-specific antibody can induce a pemphigus vulgaris - resembling phenotype in wildtype mice?

- AK7
- AK47
- AK3
- AK23

**Explanation:**

AK23 is a desmoglein 3 (Dsg3)-specific antibody that induces blister formation after inoculation of AK23-producing hybridoma cells in recombinant activating gene (Rag-2/-) recipient mice in the active disease model for pemphigus vulgaris. AK23 recognizes a calcium-dependent conformational epitope that is located at the adhesive interface in the N-terminal domain of Dsg3.