

## Allergy-immunology glossary

**Zeinab A. El-Sayed, Ghada A. Shousha**

*Pediatric Allergy and Immunology Unit, Children's Hospital, Ain-Shams University*

*Towards a clear designation of some of the terms used in allergology and immunology.*

<b>Perforin</b>	It is a pore-forming protein directed to the target cells, and secreted and released from the cytotoxic lymphocytes (Tc). <sup>1</sup> The term perforinopathy denotes the range of autosomal-recessive, immune-mediated diseases that are caused by insufficient perforin delivery to the immunological synapse. <sup>2</sup>	البروتينات الثاقبة
<b>Granzymes</b>	<b>Granzymes or granule secreted enzymes (gzm) are a family of structurally related serine proteases stored within the cytotoxic granules of Tc and natural killer cells. Whereas gzmB is the most powerful pro-apoptotic granzyme, gzmA is the most abundant. <sup>3,4</sup> Granzymes are necessary for triggering apoptosis of target cells.<sup>4</sup> Pro-apoptotic granzymes diffuse through perforin pores on the plasma membrane of the target cell. Perforin/granzyme apoptosis pathway is the primary signaling pathway used by Tc to eliminate virus-infected and/or transformed cells.<sup>1</sup> A higher number of GzmA+ and GzmB+ cells were found in the airways of fatal asthma cases.<sup>5</sup></b>	الإنزيمات المفرزة من الحبيبات

## REFERENCES

1. **VOSKOBOINIK I, WHISSTOCK JG, TRAPANI JA.** Perforin and granzymes: function, dysfunction and human pathology. *Nat Rev Immunol.* 2015;15(6):388-400.
2. **VOSKOBOINIK I, TRAPANI JA.** Perforinopathy: a spectrum of human immune disease caused by defective perforin delivery or function. *Front Immunol.* 2013 12;4:441.
3. **SUSANTO O, TRAPANI JA, BRASACCHIO D.** Controversies in granzyme biology. *Tissue Antigens* 2012; 80: 477–87.
4. **GOLSTEIN P, GREFFITHS GM.** An early history of T cell-mediated cytotoxicity. *Nat Rev Immunol.* 2018;18:527-35.
5. **ANNONI R, SILVA LF, NUSSBAUMER-OCHSNER Y, VAN SCHADEWIJK A, MAUAD T, HIEMSTRA PS, ET AL.** Increased expression of granzymes A and B in fatal asthma. *Eur Respir J* 2015; 45: 1485-88.