Antibody Cross-Reactivity in Antivenom Research

Antivenom cross-reactivity has been investigated for decades to determine which antivenoms can be used to treat snakebite envenomings from different snake species. Traditionally, the methods used for analyzing cross-reactivity have been immunodiffusion, immunoblotting, enzyme-linked immunosorbent assay (ELISA), enzymatic assays, and in vivo neutralization studies. In recent years, new methods for determination of cross-reactivity have emerged, including surface plasmon resonance, antivenomics, and high-density peptide microarray technology. Antivenomics involves a top-down assessment of the toxin-binding capacities of antivenoms, whereas high-density peptide microarray technology may be harnessed to provide in-depth knowledge on which toxin epitopes are recognized by antivenoms. This review provides an overview of both the classical and new methods used to investigate antivenom cross-reactivity, the advantages and disadvantages of each method, and examples of studies using the methods. A special focus is given to antivenomics and high-density peptide microarray technology as these high-throughput methods have recently been introduced in this field and may enable more detailed assessments of antivenom cross-reactivity.

General information
State: Published
Organisations: Department of Biotechnology and Biomedicine, Section for Synthetic Biology, Network Engineering of Eukaryotic Cell factories, Department of Bio and Health Informatics, Genomic Epidemiology, Research Group for Genomic Epidemiology, Tropical Pharmacology and Biotherapeutics, University of Cambridge, Fred Hutchinson Cancer Research Center, Technical University of Denmark
Number of pages: 19
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Toxins
Volume: 10
Issue number: 10
Article number: 393
ISSN (Print): 2072-6651
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.32 SJR 0.955 SNIP 1.136
Web of Science (2017): Impact factor 3.273
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.34 SJR 0.984 SNIP 1.21
Web of Science (2016): Impact factor 3.03
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.76 SJR 0.971 SNIP 1.343
Web of Science (2015): Impact factor 3.571
Web of Science (2015): Indexed yes
Scopus rating (2014): CiteScore 2.85 SJR 0.984 SNIP 1.032
Web of Science (2014): Impact factor 2.938
Web of Science (2014): Indexed yes
Scopus rating (2013): CiteScore 3.19 SJR 1.053 SNIP 1.193
Web of Science (2013): Impact factor 2.48
ISI indexed (2013): ISI indexed yes
Scopus rating (2012): CiteScore 2.38 SJR 0.731 SNIP 1.254
Web of Science (2012): Impact factor 2.129
ISI indexed (2012): ISI indexed no
Scopus rating (2011): CiteScore 0.94 SJR 0.337 SNIP 0.482
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.171