Immune complexes on protein chips:

measurement of antibody function using antigen microarrays

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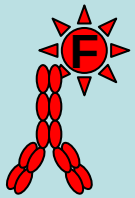
Antigen microarrays, protein chips

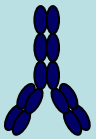
- Protein arrays are ordered arrangements of several (upto thousands) of proteins, allowing the measurement of such high numbers of molecular interactions
- Interactions between antigens and antibodies can also be monitored on microarrays
- Identification of the targets of circulating antibodies out of a library of antigens generates an immunologic fingerprint: the antibody profile

Colored proteins printed on a nitrocellulose-covered glass slide

Antibody profiling

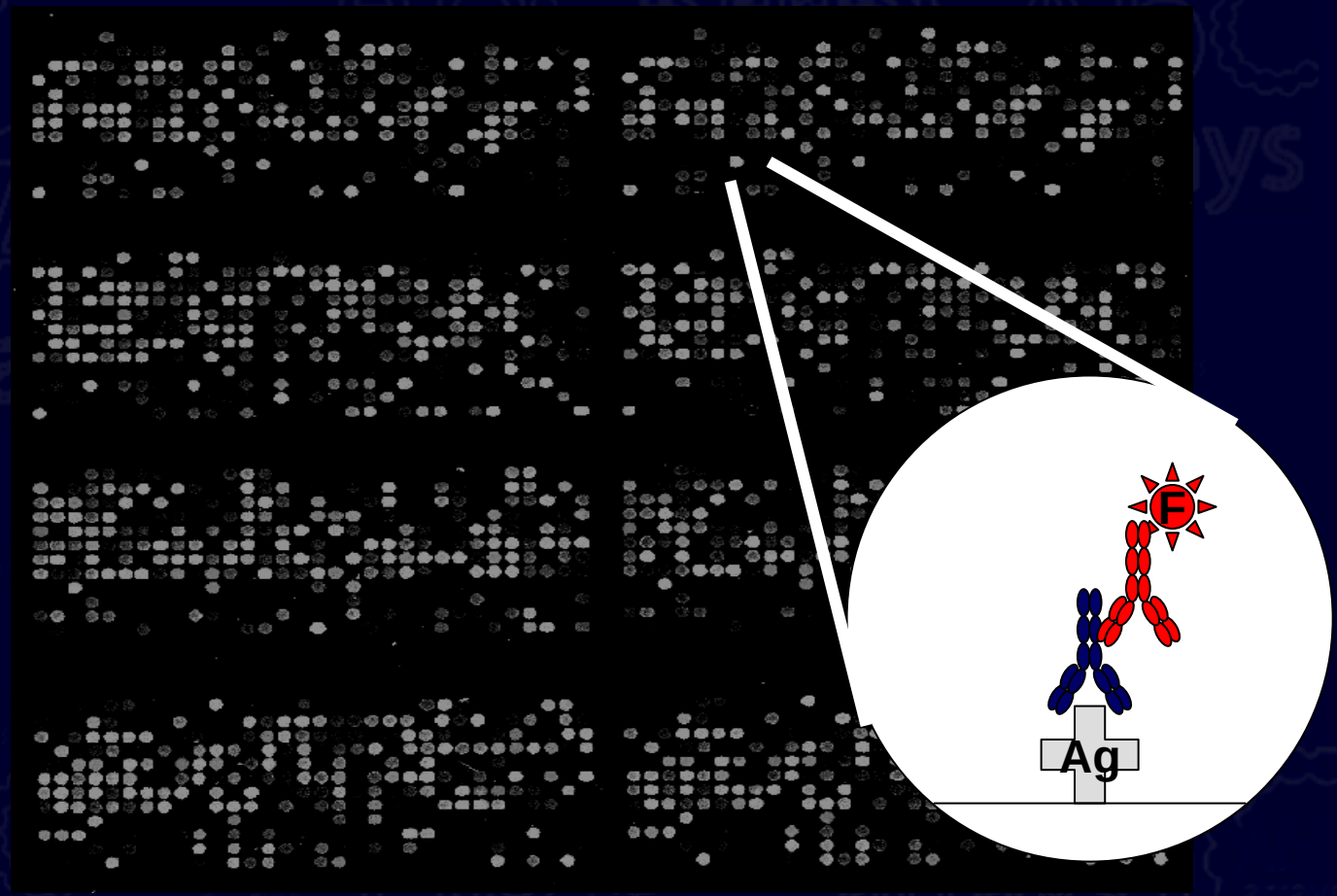


fluorochrome labeled detection antibody



serum antibody

antigen printed on the array



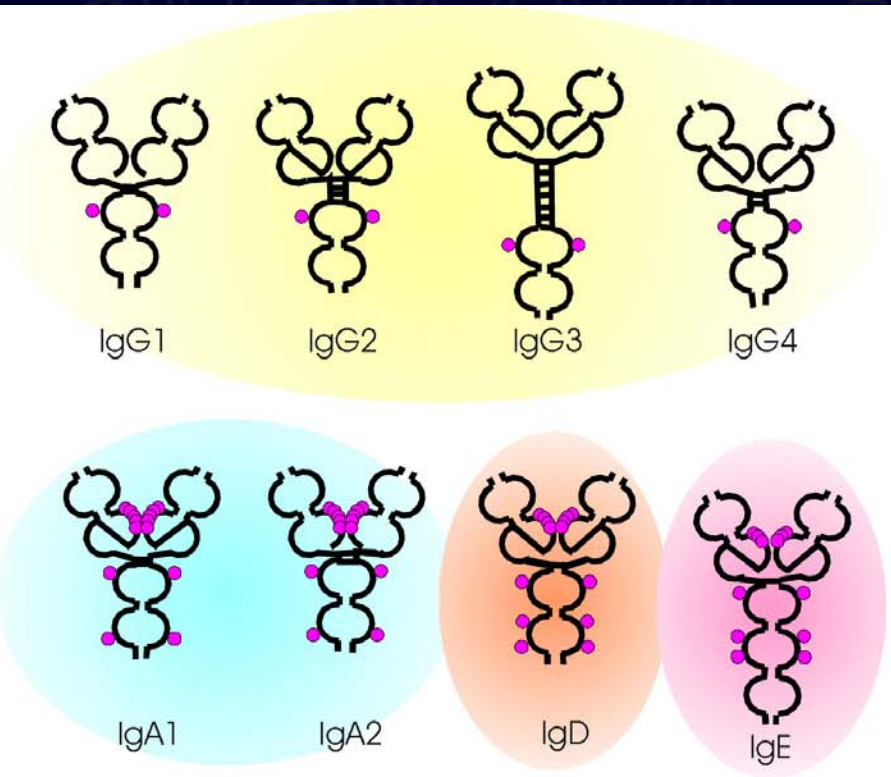
Serum antibodies bound to the antigen array are detected by secondary labeled antibodies

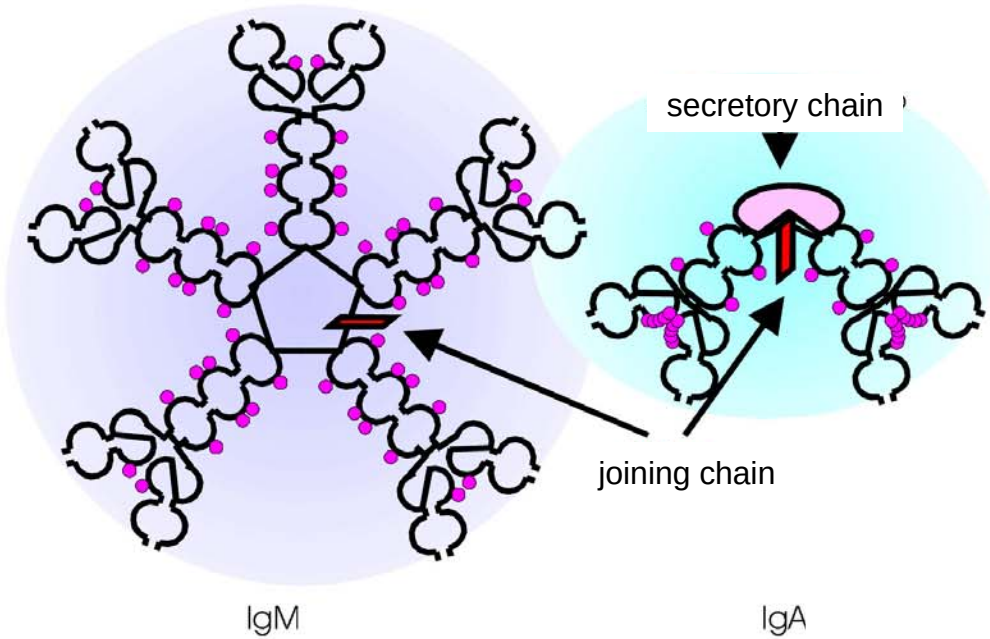
Result: quantity of antigen specific antibodies in serum

Antibodies…

come in different flavours, called

classes :	**IgD,**	**IgM,**	**IgG,**		**IgA,**	**IgE**
subclasses :			**IgG1, IgG2, IgG3, IgG4**		**IgA1, IgA2**	





The role of antibodies

in the serum is to

- neutralize targets
- activate complement
- enhance phagocytosis
- activate leukocytes

➢ Antibodies belonging to different classes and subclasses possess different effector functions

Traditional antibody profiling

- measures the binding of certain antibody classes or subclasses only – out of the many isotypes that potentially bind

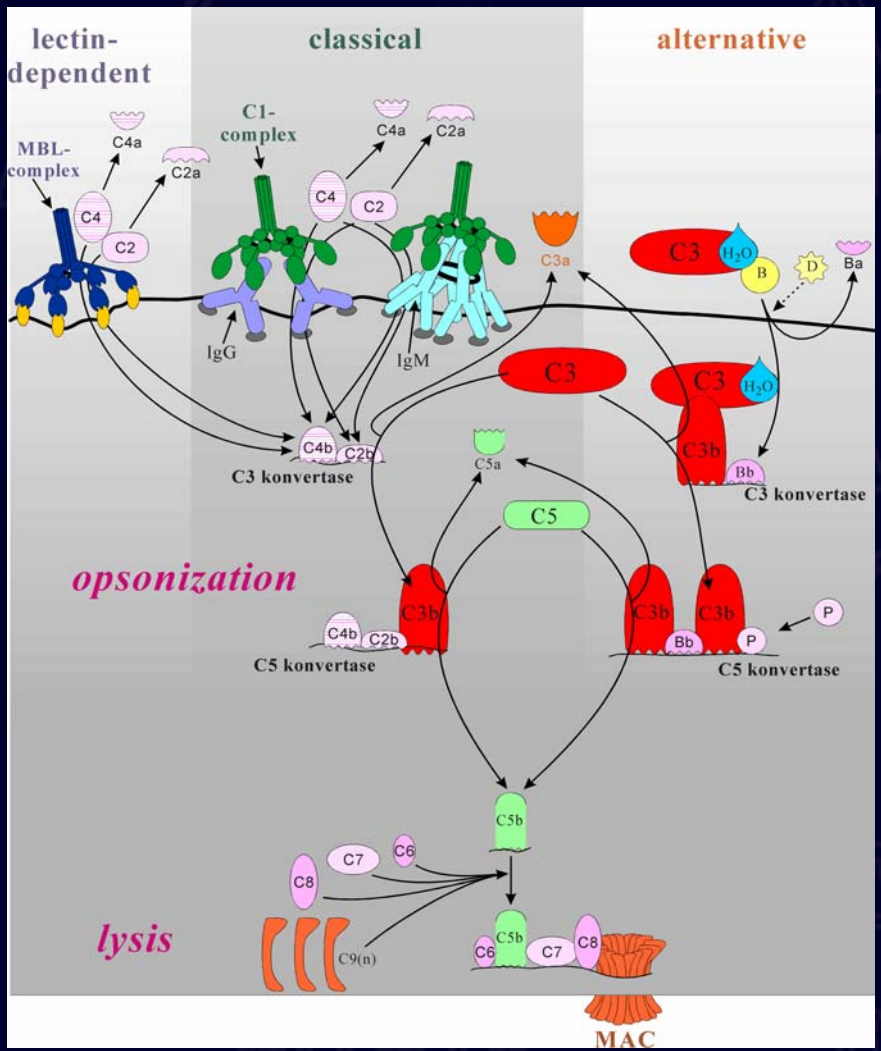
- provides no information about the effector functions

Functional antibody profiling

by AbC-array technology

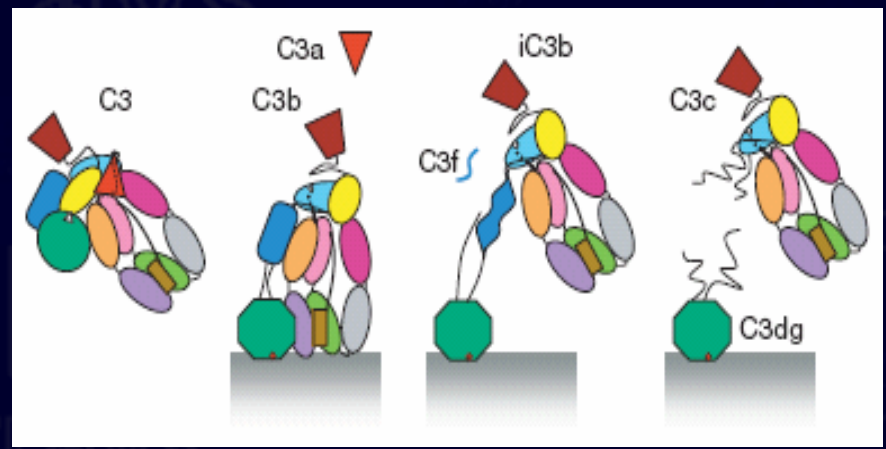
- measures the overall effect of the binding of antibodies of different isotypes on the complement system.

The complement system



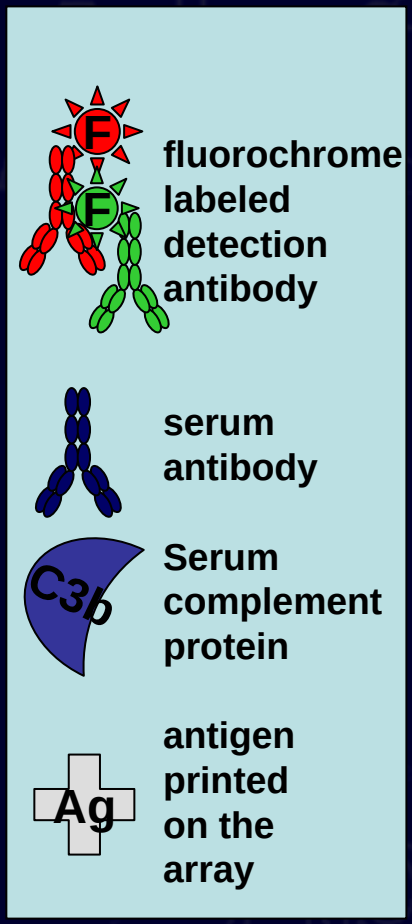
Erdei&Gergely, Immunobiology 2000

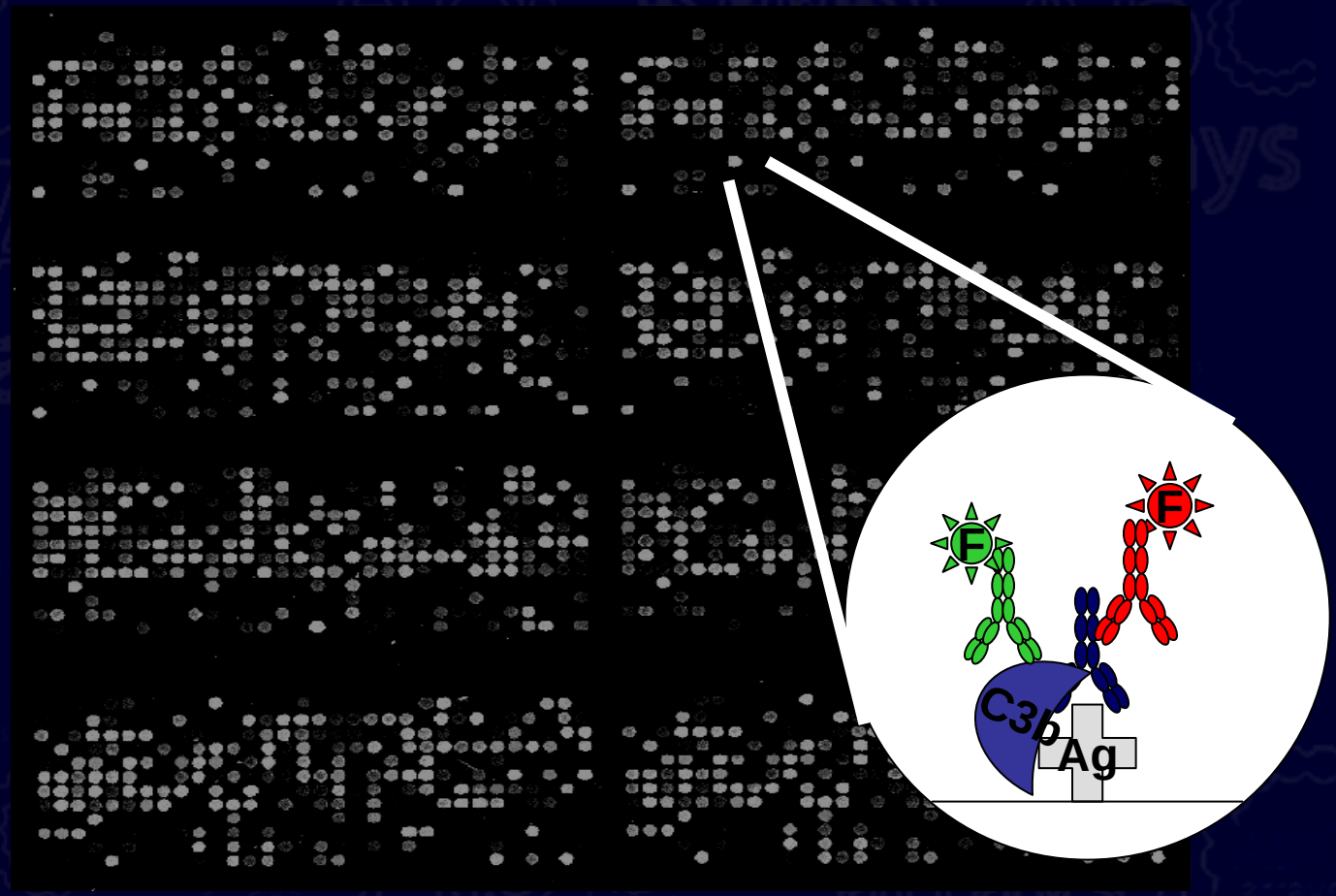
- **is a group of proteins with diverse biological functions**
- **is mostly inactive in the blood until danger signals trigger its activation**
- **is capable of molecularly tagging the site of activation and recruit leukocytes to this site**



Janssen et al., Nature 2006 Nov 9

Functional antibody profiling

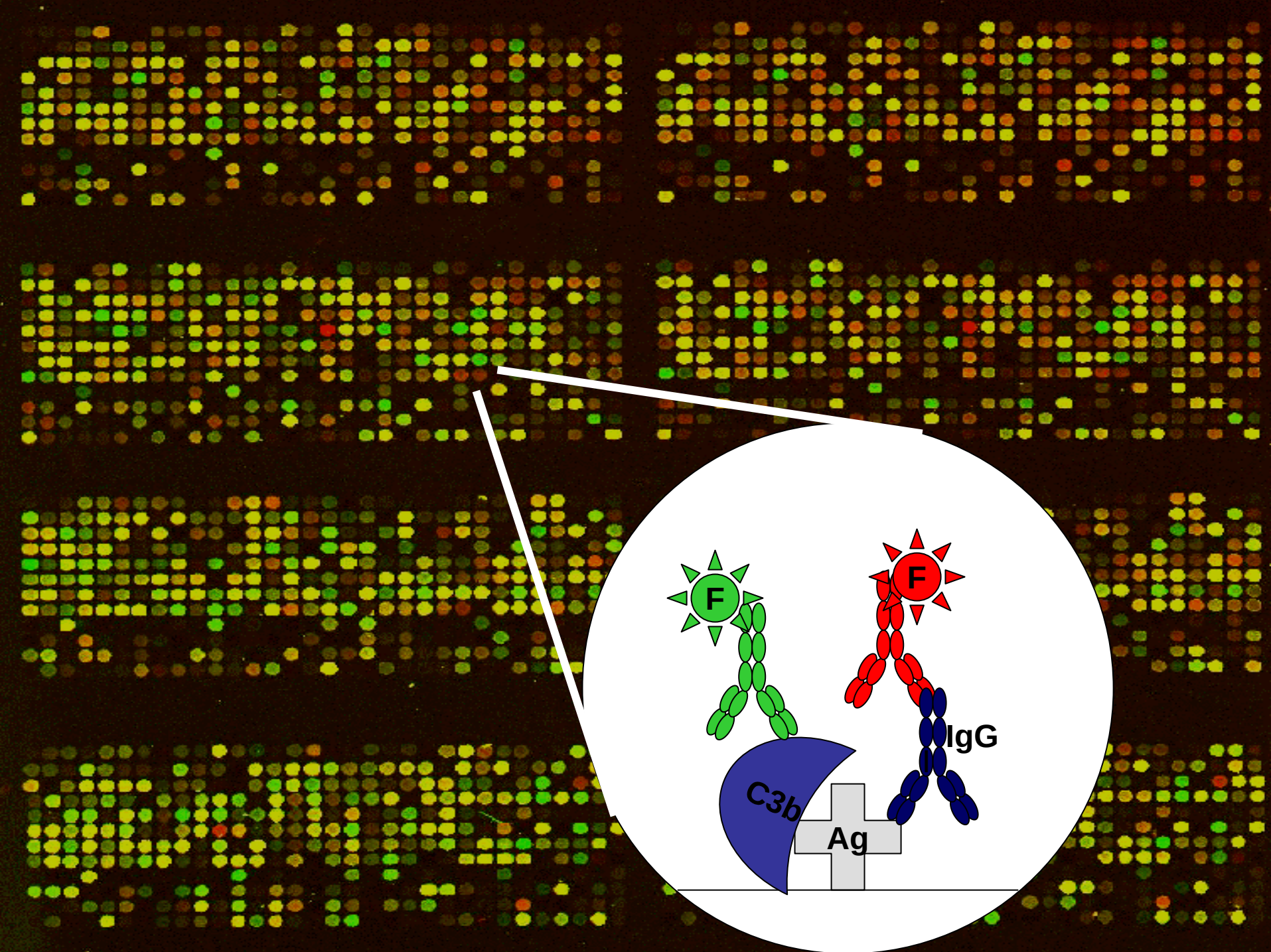




Serum antibodies and complement proteins bound to the antigen array are detected by secondary antibodies
Result: quantity and quality of antigen specific antibodies in serum

Fluorescent detection

helps the parallel measurement of antibody and complement binding information which can be merged and interpreted afterwards


F
F
IgG
C3b
Ag

For further information see our publications or contact:

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