

## Short Communication

### **X anti-*n* bodies**

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Received on December 19, 1978

#### **Abstract**

A simple and logical nomenclature is proposed for antibodies.

**Key words :** Antigens, antibodies, anti-*n* bodies.

When a 'foreign substance' (antigen) enters the body of an animal, it elicits the production of antibodies which can specifically recognise and react with the antigen. Since an antibody produced in one animal is recognised as a 'foreign substance' by other animals, it can also act as an antigen and elicit the production of so-called anti-antibodies.

Let X be an antigen. The antibodies directed against X are called 'Anti-X antibodies'. The antibodies directed against 'Anti-X antibodies' are called 'Anti anti-X antibodies'. And the antibodies directed against 'Anti anti-X antibodies' are called 'Anti anti anti-X antibodies', and so on. Thus the existing nomenclature is cumbersome and confusing.

Ute Groschel-Stewart<sup>1</sup> suggested the following four alternatives for naming an antibody against X, hoping to dispense with multiple anti's and thus avoid the confusion to describe antibodies against antibodies:

1. Anti-'X', 2. Antibodies directed against X, 3. Anti "X" serum, and 4. "X" antibodies.

The first one is undesirable because when we say anti-histamines, we do not mean antibodies against histamine but its structural analogues. The second one is not compact. The third one cannot be generalised to name antibodies against antibodies without resorting to multiple anti's. Even the fourth alternative cannot avoid the confusion of multiple anti's to describe antibodies against antibodies.

Before arriving at a logical nomenclature, let us go into the origin of the word 'antibody'. The word 'antibody' is a shortened version of 'anti-foreign body'<sup>2</sup>. As it is compact it is accepted to denote 'any anti-foreign body in general'. Let X be foreign to an animal. It would have been logical if the antibodies raised against X were called 'anti-X bodies'. But unfortunately they are called 'anti-X antibodies'. Intuitively 'insulin antibodies' could as well mean 'antibodies against insulin'. In such a situation 'anti-insulin antibodies' (which mean 'antibodies against insulin' in the accepted terminology) mean 'antibodies against insulin antibodies' (i.e., antibodies against antibodies against insulin). Hence the nomenclature is not only replete with multiple anti's but is also ambiguous.

When we say 'antibodies', it raises the question: 'Anti to what'? The phrase 'anti-foreign body' is robbed of really an expressive segment by being shortened to 'antibody'.

So to make the nomenclature logical and free from ambiguity and multiple anti's, we propose the following: 'X anti-n bodies' where 'n' stands for the 'foreign', i.e., the *antigen number*.

Niels K. Jerne<sup>3</sup> introduced the terms Ab-1, Ab-2, Ab-3, etc., for the anti-antibodies. But the author fails to see Jerne's nomenclature in the present perspective.

Let the terminology 'X anti-n bodies' be elaborated. X is the original antigen or antigen No. 1. Antibodies against X (so-called anti-X antibodies) are the antigen No. 2. And the antibodies against antibodies against X (so-called anti anti-X antibodies) are the antigen No. 3, and so on.

'X anti-1 bodies' are antibodies directed against antigen No. 1. 'X anti-2 bodies' are antibodies directed against antigen No. 2. 'X anti-3 bodies' are antibodies directed against antigen No. 3, and so on.

*In summary, X anti-1 bodies are directed against X, i.e., the antigen No. 1. And X anti-(n + 1) bodies are directed against X anti-n bodies.*

*It is readily obvious that X anti-n bodies are the nth antibodies in X's antibody-series. X anti-1 bodies are the first antibodies. X anti-2 bodies are the second antibodies. X anti-3 bodies are the third antibodies and so on.*

The verbose and logically unsound expression "anti-idiotypic antibodies" can conveniently be replaced by 'anti-2 bodies'.

**References**

1. UTE GROSCHEL-STEWART  
*Nature*, 1978, **274**, 10.
2. IVAN ROITT  
*Essential Immunology*, Blackwell Scientific, London, 3rd edition, 1977, p. 2.
3. NIELS K. JERNE  
*The Harvey Lectures*, 1976, Series 70, 93, Academic, New York.