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The Discovery of IgE

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Immunelectrophoresis of serum ND, June 1965

Anti-sera against Igs and LCs →

"Normal serum"

"Serum from ND"

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Purified IgND (well 1), IgA (well 2), IgD (well 3), IgG (well 4) and IgM (well 5)

This sera could not be typed (ie, it was not IgM, IgG, IgA or IgD)

Anti-IgA		Anti-IgD	
Anti-IgG		Anti-IgM	

Johansson & Bennich
 Immunology 1967

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Gelfiltration, Sephadex G-200, of a normal serum and one lacking IgA och IgD

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Look! We have discovered IgND!! Or is it IgE?

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Look! We have discovered IgE!!

1967 **2017**



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Some allergy history highlights

1870ies Blackley: skin tests, nasal provocation tests, pollen counts

1911 Noon: Allergen Specific Immune Therapy

1919 Ramirez: horse dander allergy asthma via blood transfusion

1921 Prausnitz & Küstner: passive transfer of positive skin test to fish

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Reagins belong to γ A globulins

- Augustin R, Hayward BJ. *Immunology* 1960;3:45-73
- Heremans JF, Vaerman JP. *Nature* 1962;193:1091
- Fireman P, Vannier WE, Goodman HC. *J exp. Med* 1963;117:603
- Vaerman, JP, Epstein W, Fudenberg H, Ishizaka K. *Nature* 1964;203:1046

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The concept of "reagin" 1965

..... "skin-sensitizing antibody is not a single, indivisible molecular species but is present in allergic sera in the form of labile complexes that...may dissociate...into smaller fragments with properties different from those of the intact skin-sensitizing antibody molecule".

In "Immunological Diseases", eds. M. Samter & H.L. Alexander, J. & A. Churchill Ltd, 1965, p. 521.

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Physicochemical properties of reaginic antibody

V. Correlation of reaginic activity with γ E-globulin antibody

Ishizaka K, Ishizaka T, Hornbrook MM.

J Immunol 1966;97:840-53.

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Blocking of the Prausnitz-Küstner test with IgND and IgG

Test solution	Blocking Ig	PK-weal size, sq mm at 10 min	Idem, at 26 min
1	Saline	64	115
2	IgND, 600 ug/ml	-	-
3	IgND, 60 ug/ml	-	-
4	IgND, 6 ug/ml	12	36
5	IgG, 600 ug/ml	44	113
6	IgG, 60 ug/ml	52	110

Stanworth D et al. *The Lancet* 1967;ii:330

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Detection of complete and incomplete antibodies to egg albumins by means of a sheep red cell-egg albumin antigen unit.

R.R.A. Coombs and Fiset M.L.

Br J Exp Pathol 1954;35:472-7

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Radio Allergosorbent Test, RAST

insoluble polymer-allergen conjugate + Allergen antibody of the IgE class (reagin) → [Complex]

[Complex] + ¹²⁵I-labelled antibody to IgE → [Radio-labelled complex]

Wide, Bennich, Johansson, The Lancet 1967;iii:1105

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Properties of IgND as of 1967

- Mol. weight, sedimentation constant, unique antigens
Johansson & Bennich, Immunology 13:381,1967
- Increased levels of IgND in atopic allergy
Johansson, The Lancet ii:951, 1967
- Dose-response blocking of PK-reaction
Stanworth, Humphrey, Bennich & Johansson, The Lancet ii:330, 1967
- Allergen-specific anti-IgND antibody by RAST
Wide, Bennich & Johansson, The Lancet ii:1105, 1967

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WHO Immunoglobulin Reference Centre, February, 1968

W. Terry D. Rowe D. Stanworth K. Ishizaka H. Bennich

Photo taken by SGO Johansson

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Data on "reagin" at the WHO Immunoglobulin Reference Centre meeting, February, 1968

	IgND	γE
Physico-chemical properties	++	-
Immunological characteristics	++	(+)
Biological activity	++	+

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Immunoglobulin E, a new class of human immunoglobulin*

H.H. Bennich, K. Ishizaka, S.G.O.Johansson, D.S. Rowe, D.R. Stanworth and W.D. Terry

Bull. Wld Hlth Org. 1968;38:151

* This memorandum was drafted by the singatories following discussions held at the WHO International Reference Centre for Immunoglobulins in Lausanne, February 1968.

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Publications on IgE

55 576

in peer-reviewed publications within
the field of allergy and clinical immunology


Web of Science
2 October, 2017

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The impact of IgE

- Acceptance of "allergy"
- Allergen characterization
- Allergy diagnosis
- Inflammation of "atopic allergy"
- Immunomodulation of allergy



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Beneficial function of IgE ?


- Clearance, Of airways and GI tract by an "allergic reaction"
- Gate keeper, immunological surveillance
- Immune protection, helminth defence
- Sensitization potentiation, enhance antibody production

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Thank you

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