

### Cross-reactions of Human and Monkey Siderophilin

WHEN tested by immunoelectrophoresis chimpanzee siderophilin has not the same mobility as human, rhesus or baboon siderophilins (Fig. 1). (The antigens used in this work were: for the human siderophilin either the purified preparation<sup>1</sup> or the whole serum, and for monkeys the whole individual sera: 6 chimpanzee sera, 6 rhesus sera and 2 baboon sera. The antisera were three pools of sera from rabbits immunized with a purified siderophilin preparation which were obtained through the courtesy of Dr. J. F. Soothill.)

By double diffusion in agar with the antiserum I (the same as used previously<sup>1</sup>) no cross-reaction (spur formation) was observed between human and any monkey siderophilins. With sera II or III, spurs are seen between human or chimpanzee siderophilin lines and rhesus or baboon siderophilin lines.

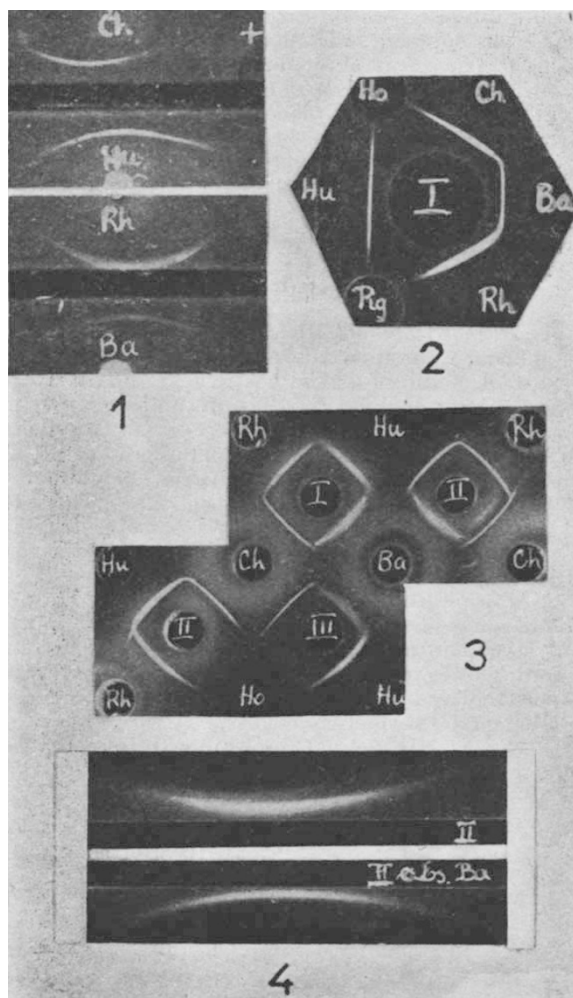


Fig. 1. Immunoelectrophoretic patterns of chimpanzee, human rhesus and baboon siderophilins as revealed by anti-human siderophilin serum I

Fig. 2. Reactions of horse, chimpanzee, baboon, rhesus, pig and human siderophilins with the anti-human siderophilin serum I

Fig. 3. Reactions of human, chimpanzee, rhesus, baboon and horse siderophilins with anti-human siderophilin sera I, II and III

Fig. 4. Immunoelectrophoretic pattern of a chymotrypsin degraded sample of human siderophilin revealed by anti-human siderophilin serum II: unabsorbed and absorbed by baboon siderophilin

The lines of human and chimpanzee siderophilins and of baboon and rhesus siderophilins fuse completely, thus showing their immunological identity with respect to those two antigens (Figs. 2 and 3).

None of the antisera tested reacts with horse, pig or goat siderophilins (Figs. 2 and 3).

When comparing several spurs formed by those cross-reacting systems it seems that the difference between chimpanzee and rhesus is greater than between human and rhesus siderophilins.

All observed spurs are shorter than those formed, for example, by horse serum albumin and bovine serum albumin with anti-horse serum albumin serum, or hen and duck ovalbumins with anti-hen ovalbumin, and they are often very weak.

Since the length of a spur seems independent of the density of the line it means that the length of the spur is probably related to the number of determinant groups in the two antigens being compared using a particular antiserum<sup>2</sup>, and the density of the spur line reflects the quantitative relationship between the amount of antibody reacting only with the homologous antigen and antibody reacting with both homologous and heterologous antigens.

It was not possible to absorb all antibodies reacting with the homologous antigen in sera II and III with the heterologous antigen.

When the antiserum II or III absorbed by rhesus or baboon serum is used for the immunoelectrophoresis of a digested sample of human siderophilin which gives two lines with the unabsorbed serum I only one line can be seen (Fig. 4). When the degraded siderophilin gives only a line split at one extremity with the unabsorbed antiserum, there is a single line with the absorbed antiserum.

These facts resemble the observation on the reaction of papain-degraded human  $\gamma$ -globulins with the corresponding antiserum absorbed by rhesus  $\gamma$ -globulin<sup>3</sup>, but they differ from the observation of chymotrypsin-degraded hen ovalbumin with the corresponding antiserum absorbed by duck ovalbumin<sup>3</sup>.

When the same sort of experiment is performed using antiserum I which does not give any spur with monkey siderophilins, absorption by those heterologous antigens is capable of removing all antibodies precipitating with the homologous antigen, but more heterologous antigen is required to remove antibodies producing one line than the other.

Thus it seems that the antibodies present in antisera II and III which react only with the homologous antigen are related to antibodies precipitating with one of the components of digested human siderophilin while the antibodies precipitating with the other component are related to antibodies precipitating with both homologous and heterologous antigens.

I thank Prof. J. R. Squire and P. G. H. Gell and the staff of the Department of Experimental Pathology, the Medical School, Birmingham, for their hospitality during my stay in that laboratory.

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<sup>1</sup> Kaminski, M. (preceding communication).

<sup>2</sup> Kaminski, M., *Immunology* (in the press).

<sup>3</sup> Rowe, D. S., *Biochem. J.*, **79**, No. 3, 27 (1961).