KAWASAKI MED. J. VOL. 12 : NO. 2, 105-106 (1986)

## Brief Note

# Demonstration of Cross-Reactivity in Allogeneic Epidermal Cells of Guinea Pigs by Intradermal Delayed-Type Skin Reaction

*Accepted for Publication on July 9, 1986*

**Key words : Skin allograft — Cross-reaction — Epidermal cell — Delayed-type skin reaction**

It has been well known that the intradermal injection of the sensitized host with cells or cell extracts of donor origin leads to a typical delayed-type skin reaction characteristic of cell-mediated hypersensitivity following allograft rejection. Guinea pigs sensitized by intradermal injection of allogeneic epidermal cells (EC) showed the positive intradermal delayed-type skin reaction to the cells 2 weeks later.[1] In the work reported here, we attempted to investigate the cross-reactivity of allogeneic EC by the intradermal delayed-type skin reaction using three strains of inbred guinea pigs.

EC suspensions were prepared from inbred JY-1 strain, strain 13 and strain 2 guinea pigs according to the technique described by Stingl *et al.*[2] $3\times10^7$ ECs derived from JY-1, strain 13 or strain 2 animals were injected intradermally to the back of JY-1 strain guinea pigs, and the skin testing by intradermal injection of $5\times10^6$ ECs from JY-1, strain 13 and strain 2 guinea pigs was carried out 14 days later. Diameters of erythematous indurations were measured in millimeter 24 hours after skin testing.

The results are summarized schematically in Figure. Positive delayed-type skin reactions were observed not only to the cells used for sensitization but also to allogeneic ECs. Cross-reactivity of allogeneic ECs was demonstrated by the intradermal delayed-type skin reaction. With regard to the histocompatibility

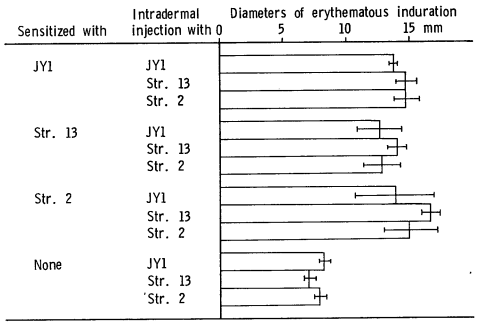


Fig. Delayed-type skin reaction 24 hours after intradermal injection of $5\times10^6$ ECs prepared from JY-1 strain, strain 13 and strain 2 guinea pigs to JY-1 strain guinea pigs which 14 days earlier had been applied intradermally with $3\times10^7$ ECs from JY-1, strain 13 or strain 2 guinea pigs. Bars represent SEM.

中川昌次郎，方　東植，武井洋二，植木宏明

antigens of the inbred guinea pigs used, it has been shown that JY-1 and strain 13 guinea pigs have the guinea pig leukocyte antigens (GPLAs) Ia1 and Ia2, but differ with regard to GPLA B and S.[3] JY-1 and strain 2 guinea pigs are considered to have no antigens in common. Transplantation antigens, as defined by Medawar,[4] are substances that stimulate the host to reject donor-type allografts in accelerated fashion (the second-set reaction). They are the distinctive cellular markers representing the histocompatibility loci. Materials possessing immunogenic capabilities are termed "transplantation antigens", and distinguished from "histocompatibility substances", which are only reactive in systems related to but not dependent upon graft rejection, *viz.*, delayed-type hypersensitivity responses in sensitized hosts, and the induction of or interaction with alloantibody.[5] Our present result suggests that there exist considerable differences in antigenicity between transplantation antigens and histocompatibility antigens.

**Shojiro NAKAGAWA, Dongsik BANG, Yoji TAKEI and Hiroaki UEKI**

*Department of Dermatology, Kawasaki Medical School, Kurashiki 701-01, Japan*

**Acknowledgment**

This work was supported in part by the Japan Lydia O'Leary Corporation Fund for International Cooperative Research in Dermatology (1985, 1986) and by Kawasaki Medical School Grant (No. 60-203) for project research.

## REFERENCES

1) Nakagawa, S., Bang, D., Takei, Y., Jinno, Y. and Ueki, H. : A histological study on intradermal implanted epidermal cells in guinea pigs : A new method for evaluation of skin allograft rejection. J. Invest. Dermatol. (in print)
2) Stingl, G., Katz, S.I., Shevach, E.M., Wolff-Schreiner, E.C. and Green, I. : Detection of Ia antigens on Langerhans cells in guinea pig skin. J. Immunol. **120** : 570-578, 1978
3) Chiba, J., Otokawa, M., Nakagawa, M. and Egashira, Y. : Serological studies on the major histocompatibility complex of new inbred strains of the guinea pig. Microbiol. Immunol. **22** : 545-555, 1978
4) Medawar, P.B. : The Behaviour and fate of skin autografts and skin homografts in rabbits. J. Anat. **78** : 176-199, 1944
5) Kahan, B.D. and Reisfeld, R.A. : Transplantation antigens. Solubilized antigens provide chemical markers of biologic individuality. Science **164** : 514-521, 1969