

Biomedicine

From a meeting in Los Angeles sponsored by Research to Prevent Blindness

Combating corneal transplant rejection

Corneas are the most commonly transplanted tissues, but they are attacked by the immune systems of at least 10 percent of the people who receive them—despite topical antirejection drugs. For these people, subsequent corneal transplants fail 65 percent of the time.

To prevent such failures, researchers performed corneal transplants in mice that they had immunized against rejection. For the immunization, the researchers took skin from the donor mice, processed it with enzymes, mixed it with a harmless component of cholera toxin, and fed it to the recipient mice for 10 days before the transplant. More than 90 percent of the transplants into immunized mice succeeded, even without antirejection drugs. Mice on dosage regimes begun on the day of the transplant maintained an 80 percent acceptance rate without antirejection drugs.

All of the mice that weren't immunized or given antirejection drugs rejected the corneas. The researchers reported portions of their study in the September BRITISH JOURNAL OF OPHTHALMOLOGY.

"It appears from these results that we can . . . reprogram the immune system," says Jerry Y. Niederkorn, an immunologist at the University of Texas Southwestern Medical Center at Dallas. To prepare doses for human patients, doctors would need to collect from the donor a skin patch the size of two \$1 bills, he says. The processed tissue could be fed to recipients in gelatin capsules. His team is currently seeking approval for a human study next year. —N.S.

A better understanding of pterygia

Pterygia are cloudy growths that creep out onto the front of the eye, block light, and lead to blindness if untreated. The condition occurs most often among outdoor workers and affects more than 10 percent of people who live in the tropics.

Now, cell biologist Ted W. Reid of Texas Tech University in Lubbock has found that the disease arises when *p53* genes in surface cells of the cornea mutate in response to ultraviolet light. The mutated genes fail to regulate programmed cell death. Damaged cells that would normally be sloughed off migrate to the outer cornea, forming a pterygium.

Pterygia arise on the side of the eye nearer the nose because sunlight entering the eye from the other side is magnified 20 times by the cornea as it passes through. The nose blocks most of the light coming from the opposite direction.

Pterygia can be removed surgically, but they tend to regrow much more quickly than they grew originally. Reid says that to thwart regrowth, surgeons should remove a larger margin of cells around the pterygium during the operation. People exposed to lots of sunlight should wear hats and sunglasses, he adds. —N.S.

Sweet dreams for contact lenses

Most contact lens wearers take out their "eyes" every night because no continuous-wear lenses tested to date have let enough oxygen get to the eye. Lack of oxygen can cause bacteria to bind to the cornea and trigger an infection.

Now, in tests of the six newest types of soft contact lenses provided by manufacturers, researchers at the University of Texas Southwestern Medical Center at Dallas have found that two highly permeable varieties seem to defeat such bacterial binding. The investigators monitored 77 people assigned to wear a set of the soft contact lenses nearly continuously for 3 months, with one night off per week. Analysis showed that four of the contacts, all currently in use, caused bacterial binding. The two newer lenses avoided the problem.

The testing procedure gives regulators "a way to assess lenses in the future," says UT Southwestern's H. Dwight Cavanagh. The findings augur well for the future of continuous-wear contacts, he says. —N.S.

| 1. Publication Title | | 2. Publication Number | | 3. Filing Date | |
|--|--|--|--|------------------------------|-------------------|
| Science News | | 0 0 3 6 - 8 4 2 3 | | 9/30/97 | |
| 4. Issue Frequency | | 5. Number of Issues Published Annually | | 6. Annual Subscription Price | |
| Weekly | | 51/year | | 49.50 | |
| 7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4) | | | | | 8. Contact Person |
| 1719 N St NW, Washington DC 20036-2888 | | | | | Christina Smith |
| | | | | | Telephone |
| | | | | | (202) 785-2255 |
| 8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer) | | | | | |
| Science Service 1719 N St NW, Washington DC 20036-2888 | | | | | |
| 9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank) | | | | | |
| Publisher (Name and complete mailing address) | | | | | |
| Thomas Peter Bennett Science News, 1719 N St NW, Washington DC 20036-2888 | | | | | |
| Editor (Name and complete mailing address) | | | | | |
| Julie Ann Miller Science News, 1719 N St NW, Washington DC 20036-2888 | | | | | |
| Managing Editor (Name and complete mailing address) | | | | | |
| Blair Burns Potter, Science News, 1719 N St NW, Washington DC 20036-2888 | | | | | |
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| Full Name | | Complete Mailing Address | | | |
| Science Service | | 1719 N St NW | | | |
| a nonprofit corporation | | Washington DC 20036-2888 | | | |
| 11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities. If none, check box. | | | | | |
| <input checked="" type="checkbox"/> None | | | | | |
| Full Name | | Complete Mailing Address | | | |
| NONE | | | | | |
| 12. Tax Status (For completion by nonprofit organizations authorized to mail at special rates) (Check one) | | | | | |
| <input checked="" type="checkbox"/> Has Not Changed During Preceding 12 Months | | | | | |
| <input type="checkbox"/> Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement) | | | | | |
| PS Form 3526, September 1995 (See Instructions on Reverse) | | | | | |

| | | | |
|--|--|--|--|
| 13. Publication Title | | 14. Issue Date for Circulation Data Below | |
| Science News | | September 27, 1997 | |
| 15. Extent and Nature of Circulation | | Average No. Copies Each Issue During Preceding 12 Months | Actual No. Copies of Single Issue Published Nearest to Filing Date |
| a. Total Number of Copies (Net press run) | | 217,690 | 215,545 |
| b. Paid and/or Requested Circulation | | | |
| (1) Sales Through Dealers and Carriers, Street Vendors, and Counter Sales (Not mailed) | | 0 | 0 |
| (2) Paid or Requested Mail Subscriptions (include advertiser's proof copies and exchange copies) | | 213,619 | 211,948 |
| c. Total Paid and/or Requested Circulation (Sum of 15b(1) and 15b(2)) | | 213,619 | 211,948 |
| d. Free Distribution by Mail (Samples, complimentary, and other free) | | 784 | 636 |
| e. Free Distribution Outside the Mail (Carriers or other means) | | 0 | 0 |
| f. Total Free Distribution (Sum of 15d and 15e) | | 784 | 636 |
| g. Total Distribution (Sum of 15c and 15f) | | 214,403 | 212,584 |
| h. Copies not Distributed | | | |
| (1) Office Use, Leftovers, Spoiled | | 3,288 | 2,961 |
| (2) Returns from News Agents | | 0 | 0 |
| i. Total (Sum of 15g, 15h(1), and 15h(2)) | | 217,691 | 215,545 |
| Percent Paid and/or Requested Circulation (15c / 15g x 100) | | 99.7% | 99.7% |
| 16. Publication Statement of Ownership | | | |
| <input type="checkbox"/> Publication required. Will be printed in the _____ issue of this publication. | | | |
| <input checked="" type="checkbox"/> Publication not required. | | | |
| 17. Signature and Title of Editor, Publisher, Business Manager, or Owner | | | Date |
| D. M. K. Anderson, VP & Business Manager | | | Sept 30, 1997 |
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