THE DNA FILES

The DNA Files: Unraveling the Mysteries of Genetics
ABSTRACT

The DNA Files is an award-winning radio documentary series on genetics created by SoundVision Productions. *The DNA Files* was hosted by John Hockenberry and was presented in documentary and discussion format. The programs covered a range of topics from prenatal and predictive gene testing, gene therapy, and commercialization of genetic information to new evolutionary genetic evidence, transgenic vegetables and use of DNA in forensics. The series has been hailed as setting a new standard in science reporting on public radio. ***The DNA Files*** is distinguished by the depth and range of its coverage, due in large part to the unique partnership that SoundVision developed with its science advisors, involving them actively in the series at every stage of production. At this writing, the project has received top awards from the American Institute of Biological Sciences and the Association for Women in Communications (Clarion). The series achieved significant public radio market saturation through broadcast on an estimated minimum of 180 stations in the National Public Radio network with approximately 1 million listeners.

The DNA Files is currently being broadcast, or has been broadcast, on such prestigious stations as KQED San Francisco, WBUR Boston, WAMU Washington D.C., WNYC New York, KERA Dallas, KUOW Seattle and WBEZ Chicago. The series continues to garner praise from the scientific and radio communities alike, as well as, of course, the listeners. Satellite uplink of *The DNA Files* began November 5, 1998 to the National Public Radio (NPR) network of 600+ stations. The first broadcast took place on November 7, 1998. SoundVision established working relationships with professionals in the human genome project and genetics more generally, involving them in the rigorous process of identifying topics and the focus of presentation, as well as checking content development throughout the production process. SoundVision is well positioned to continue to contribute to improving science literacy through training workshops and the production of future programs and ancillary materials on genetics and other science subjects.

SoundVision Productions 2991 SHATTUCK AVE. SUITE 304 · BERKELEY, CA 94705 • TEL: (510) 486-1185 • FAX: (510) 486-1287 • strp@aol.com

THE DNA FILES

Final Report
SoundVision Productions
The DNA Files: Unraveling the Mysteries of Genetics
May 1999

The DNA Files is an award-winning radio documentary series on genetics created by SoundVision Productions. The programs provide clear, in-depth treatment of major issues of our time in a format that makes their complexity accessible to the lay public and emphasizes their significance for all human societies. The series achieved significant public radio market saturation through broadcast on an estimated minimum of 180 stations in the National Public Radio network with approximately 1 million listeners. The shows were broadcast on all ten major urban radio markets and in all but six states in this country, which we feel confident will be represented during the next feed of the series in June. *The DNA Files* was hosted by John Hockenberry and was presented in documentary and discussion format. The programs covered a range of topics from prenatal and predictive gene testing, gene therapy, and commercialization of genetic information to new evolutionary genetic evidence, transgenic vegetables and use of DNA in forensics. The series has been hailed as setting a new standard in science reporting on public radio. ***The DNA Files*** is distinguished by the depth and range of its coverage, due in large part to the unique partnership that SoundVision developed with its science advisors, involving them actively in the series at every stage of production. At this writing, the project has received top awards from the American Institute of Biological Sciences and the Association for Women in Communications (Clarion).

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Feedback on *The DNA Files:*

> ***WAMC, a ten-facility broadcaster was amazed and really delighted by the reaction we got to "The DNA Files." We knew our listeners were smart, engaged, and interested, but we never expected to hear the volume of positive comments about the program that we did receive. It proves once again that if you offer quality programming that tell difficult stories in an interesting way that people will love and appreciate you for it. I confess that when I first heard about the project and our program director suggested it, my eyes glazed over, but boy, did I***

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wake up when the kudos began to come in. I look forward to other efforts from these remarkable producers and anyone who wants to talk to me about it should feel free to do so. — Alan Chartock, Chair and Executive Director, Northeast Public Radio Network

Over this past couple of years I have enjoyed acting as an advisor for The DNA Files....So often people who ask me to advise only want a name for their grant application or letterhead; but for The DNA Files I feel that your crew and the advisors have truly worked together. ... your editors and reporters frequently solicit input from the advisory panel, in addition to educating themselves through a variety of additional sources. Since The DNA Files began airing I have heard many extremely positive comments from people all over the country....Your project is not only educating the public about current topics in genetics and ethics, but also creating a cadre of reporters who have a sophisticated understanding of genetics and the related social issues. By educating both reporters and the public you are helping to raise the level of public discourse both now and in the future. — Pilar N. Ossorio, Ph.D., JD, advisor to The DNA Files

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By chance, I happened to have my radio tuned to WHYY and heard your program, The DNA Files on Jan 7. It was without a doubt one of the most extraordinary programs I have ever heard on NPR. As a non-scientist (but married to a micro-biologist), I appreciated the lucid development and explication of the extremely complex information that was conveyed. I encourage you to disseminate these programs to the educational community throughout the country. It is more imperative than ever that educators from disciplines outside the sciences become more conversant in such topics. — Judith Hope-Klessig

The DNA Files sets a new standard for excellence in science coverage on public radio. — Alan Snitow, News Producer, KTVU-TV, Oakland, CA.

The DNA Files is really excellent! And the response from our listeners has been very much the same. — Kingsley Smith, Program Director, WHYY Philadelphia

On behalf of my colleagues in PE Biosystems, let me express our appreciation for the high standard of broadcasting excellence achieved by your recently produced series, The DNA Files. PE Biosystems was pround to underwrite the entire series when it was recently broadcast on our local NPR affiliate, KQED in San Francisco. We have received many messages from our staff and customers expressing appreciation for our underwriting of this series. — Frank Gannon, Manager, Public Relations, PE Biosystems, Foster City CA.

The above quotes represent a sample of the kinds of feedback SoundVision has received about *The DNA Files* from both listeners and broadcast professionals. The following individuals have stated that they would be interested in further offerings from SoundVision, because of their satisfaction with the high quality of the current series: NPR news and information vice president Jeffrey Dvorkian; Kingsley Smith, Program Director, WHYY Philadelphia; Joanne Wallace, General Manager, KQED San Francisco; Ross Reynolds, KUOW Seattle; Jeanne Fisher, WXXI Rochester NY; George Boosey, WBUR; Mike Pengra, Minnesota Public Radio; Leo Siedo, KUT Austin; Jeff Hansen, KERA Dallas; Barbara Sayer, WQCS, Ashville, NC; Guy Rathbun, KCBX San Luis Obispo; and Don Hein, Program Director, KLCC, Eugene

Lessons Learned

A number of important lessons were learned by the principals in developing and implementing this three-year project. For example, SoundVision senior producers learned that it is in fact useful, and not necessarily overwhelming, to include the

documentary producers as recipients of all raw advisor comments, and even to include them in the editorial meetings discussing the merits of various comments and how to include those points in the scripts. There had been some tendency on the part of the central editorial staff to buffer the producers from the huge amount of, sometimes contradictory, advice being sent from the project's science reviewers.

The scope of this project proved beyond the initial imaginings of the principals. With producers, stringers, reporters, engineers and advisors scattered all over the country, it was an accomplishment of biblical proportion to coordinate the various stages of the interview and engineering processes; secure all the necessary legal releases; be able to include important individuals whose own schedules were daunting, to say the least; and not end up with some producers calling the same sources twice and other similar faux pas. This, in fact, happened only once or twice — a credit to the logistical juggling and communication systems put in place for this project.

Finally, and probably most importantly, future SoundVision projects will benefit from these aspects of the production of *The DNA Files*, as well as the tremendous garnering of physical and human resources brought to bear. For example, SoundVision has contributed, and will continue to contribute, to improving science literacy (and thus coverage of science issues) among public radio reporters and producers. A hallmark of SoundVision's work on *The DNA Files* is the particular dedication to training and supporting the production team with the information and resources they would need to produce the highest quality documentaries on the subject of genetics. In fact, SoundVision has recently received a grant to replicate and memorialize the training workshop developed to serve as an orientation to the subject of genetics for its team of producers and editors. The new funds support developing a training workshop for reporters and editors on covering science more generally. SoundVision continues to seek funds to further its work in promoting public understanding of science and technology. *The DNA Files* was an excellent vehicle with which to establish the ties, identify the resources and obtain a familiarity with the scientific community that will facilitate the future success of this mission.

These were the nine programs in *The DNA Files* series; they were distributed in the following order:

1) **The Human Genome Project: Mapping the Future**
2) **The Genetics of Human Evolution: Where Did We Come From? Where Did We Go?**
3) **Prenatal Genetic Testing: Do You Really Want to Know Your Baby's Future?**
4) **Plants, Animals and Transgenics: A Tomato By Any Other Name**
5) **Gene Therapy: Medicine for Your Genes**
6) **Law and the Genetics of Identity**
7) **Predictive Genetic Tests: Do You Really Want to Know Your Future?**
8) **DNA and Behavior: Is Our Fate In Our Genes?**
9) **Genetics and Biotechnology: DNA in the Marketplace**

The following is a list of the individuals interviewed and appearing in the shows:

"Prenatal Genetic Testing: *Do You Really Want to Know Your Baby's Future?"*

- Paula Cosper, MD. University of Alabama, Laboratory of Medical Genetics, Birmingham AL
- George Cunningham, MD. California Department of Health Services, Genetic Disease Branch, Berkeley CA
- Troy Duster. Institute for the Study of Social Change, University of California at Berkeley, Berkeley CA
- Lee Fallon. Genetic Counselor, Genetics and IVF Institute, Fairfax VA
- Claire Francomano, MD. National Institutes of Health (NIH), Bethesda MD
- Sandra Hullett, MD. West Alabama Health Services, Eutaw AL
- Ruth Hubbard. Council of Responsible Genetics, Cambridge MA
- Michael Kaback, MD. University of California at San Diego, La Jolla CA
- Barbara Katz Rothman. City University of New York, New York NY
- Ruth Ricker. Former President, Little People of America, Boston MA
- Ruth Schwartz Cowan. State University of New York/Stony Brook, Stony Brook NY
- Lee Silver. Princeton University, Princeton NJ
- Rugger Staggers, MD. Eutaw AL
- Dorothy Wertz. Shriver Center, Waltham MA
- David Witt, MD. Chief of Genetics Department, Kaiser Permanente, San Jose CA

"Predictive Genetic Testing: *Do You Really Want to Know Your Future?"*

- Lori B. Andrews. Chicago Kent Law School, Chicago IL
- George Annas. School of Public Health, Boston University, Boston MA
- James Bowman, MD. University of Chicago, Chicago IL
- Troy Duster. Institute for the Study of Social Change, University of California at Berkeley, Berkeley CA
- Lisa Geller. Technology Specialist, Fish & Richardson, Boston MA
- Cynthia Gorney. Writer, Oakland CA
- Dana Hawkins. Associate Editor, U.S. News and World Report, Washington DC
- Neil Holtzman. Johns Hopkins University, Baltimore MD
- William Jagust. Department of Neurology, University of California at Davis, Sacramento CA
- Michael Kaback, MD. University of California at San Diego, La Jolla CA
- Mary Claire King. University of Washington at Seattle, Seattle WA
- Barbara Koenig. Co-Director, Center for the Study of Genomics, Ethics and Society, Palo Alto CA
- Arnold Oliphant. Vice President for Functional Genomics, Myriad Genetics, Erda UT
- Gloria Peterson, MD. School of Public Health, Baltimore MD

- Mark Skolnick. Chief Scientific Officer, Myriad Genetics, Salt Lake City UT
- Susan Van Gelder, Chief of Staff, Health Insurance Association of America, Washington DC.
- Bert Vogelstein, MD. Johns Hopkins University, Baltimore MD
- Robert Weinberg, Massachusetts Institute of Technology, Whitehead Institute, Cambridge MA
- Dorothy Wertz, Shriver Center, Waltham MA
- Nancy Wexler, President, Hereditary Disease Foundation, Santa Monica CA
- Alice Wexler, Research Scholar, Center for the Study of Women, University of California Los Angeles. Santa Monica CA
- Milton Wexler, Psychoanalyst and Chairman of the Board, Hereditary Disease Foundation, Santa Monica CA

"Plants, Animals and Trangenics: A Tomato By Any Other Name"

- Don Beitz, MD. Agriculture, Iowa State University, Ames IA
- Alan Bennett, MD. Vegetable Crops, University of California at Davis, Davis CA
- Nena Bloom, Center for Engineering Plants for Resistance Against Pathogens, Davis CA
- Tony Cavilieri, V.P. of Traits and Trade Technology, Pioneer Hi-Bred International, Johnston IA
- Gary Comstock, MD. Director of Bioethics Program, Iowa State University, Ames IA
- Julian Cooper, MD. Chief Operating Officer, PPL Therapeutics, Blacksburg VA
- John Fagan. Chief Scientific Officer/Genetic ID, Inc.,
- Mahareshi University, Fairfield IA
- Glen Keppy. Keppy Farms, Davenport IA
- Peggy Lemaux, MD. Extension Specialist in Plant Biotechnology, University of California at Berkeley, Berkeley CA
- John Mayfield, MD. Molecular Biology, Iowa State University, Ames IA
- Martina McGloughlin, MD.Director of Biotechnology Program, University of California at Davis, Davis CA
- Margaret Mellon, MD. Director of Agriculture and Biotechnology Program, Union of Concerned Scientists, Washington DC
- Allison Morgan, MD. Research Manager, DNAP (formerly DNA Plant Technology), Oakland CA
- Bernard Rollin, MD. Philosophy, Colorado State University at Ft. Collins, Ft. Collins CO
- Dave Seilstad. Youth Field Specialist, Iowa State University Extension Office, Ames IA
- Joey Skaggs. Media Artist and Web Provacateur, stopbiopeep.com
- Barbara Soots. Education Coordinator, Center for Engineering Plants for Resistance Against Pathogens, University of California at Davis, Davis CA

- Steve Taylor, MD. Director of Food Allergy Research and Resource Program, University of Nebraska at Lincoln, Lincoln NE
- Rod Townsend, MD. Director of Regulatory Affairs, Pioneer Hi-Bred International, Johnston IA
- Howard Tyler, MD. Animal Science, Iowa State University, Ames IA
- Howard Yana-Shapiro. Research Director, Seeds of Change, Rio Grande River NM

"DNA and Behavior: Is Our Fate in Our Genes"

- Evan Balaban, MD.Neurosciences Institute, San Diego CA
- John Crabbe, MD.Psychologist, Veterans' Affairs (V.A.) Medical Center, Portland
- Dean Hamer, MD.National Institutes of Health (NIH), Bethesda MD
- Ruth Hubbard, MD.Council of Responsible Genetics, Woods Hole MA
- Anil Malhotra, MD.Psychiatrist, Hillside Hospital, Glen Oaks NY
- Ernest Noble, MD.UCLA School of Medicine, Los Angeles CA
- Tamara Phillips, MD.Veterans' Affairs Medical Center, Portland OR
- Karen Rader. Sarah Lawrence College, Bronxville NY
- Peter Schoenemann, MD.Psychologist, Purdue University, Lafayette IN
- Robert McRae, MD.National Institute of Aging, Baltimore MD
- Scott Stoltenberg, MD.University of Michigan Alcohol Research Center, Ann Arbor MI
- Lee Silver, MD.Molecular Genetics, Princeton University, Princeton NJ
- Pilar Ossorio, MD.American Medical Association, Chicago IL

"Gene Therapy: Medicine for Your Genes"

- Arthur Caplan. Director of Center for Bioethics, University of
- Pennsylvania, Philadelphia PA
- Jonathan Davie. Berwick Academy, South Berwick ME
- Mark Frankel. President, American Association for the Advancement of
- Science (AAAS), Washington DC
- Ted Friedmann, MD.Director of Human Gene Therapy Program, University
- of California at San Diego, La Jolla CA
- Jay Jacoby. University of Pennsylvania, Philadelphia PA
- Michael Kotlikoff. Department of Animal Biology, University of Pennsylvania, Philadelphia PA
- Gary Nabel, MD.University of Michigan, Ann Arbor MI
- Stuart Newman, MD.New York Medical College, Valhalla NY
- Allen I. Oliff. Executive Director of Cancer Research, Merck Research
- Laboratories, Whitehouse Station NJ

- Daniel Sterman, MD.University of Pennsylvania, Philadelphia PA
- Laurie Zoloth Dorfman. San Francisco State University, San Francisco CA

"Genetics and Biotechnology: DNA in the Marketplace"

- Craig Venter. President, TIGR, Rockville MD
- Katherine de Santis. Corporate Communications, Human Genome Sciences, Rockville MD
- John Doll. Director of Technology Center, U.S. Patent and Trademark Office, Washington DC
- Rebecca Eisenberg. University of Michigan Law School, Ann Arbor MI
- William Hazeltine. Chairman and CEO, Human Genome Sciences, Rockville MD
- Steve Holtzman. Chief Business Officer, Millenium Pharmaceuticals, Cambridge MA
- Sheldon Krimsky. Dept. of Urban & Environmental Policy, Tufts University, Medford MA
- Debra Leonard. Director of Molecular Pathology Laboratory, University of Pennsylvania, Philadelphia PA
- Stuart Newman, MD. NY Medical Center, Valhalla NY
- Barbara Handelin. Handelin Associates, Westchester PA

"The Genetics of Human Evolution: Where Did We Come From? Where Did We Go?"

- Milford H. Wolpoff. University of Michigan, Ann Arbor MI
- Henry T. Greely. Stanford School of Law, Palo Alto CA
- Frank C. Duckapoo. Arizona State University, Flagstaff AZ
- Joanna Louise Mountain. Stanford University, Palo Alto CA
- Joseph H. Greenberg. Stanford University, Palo Alto CA
- Stephen J. O'Brien. Chief of Laboratory of Genomic Diversity, National Cancer Institute, Frederick MD
- Jonathan Marks. University of California at Berkeley, Berkeley CA
- Mary Claire King. University of Washington at Seattle, Seattle WA
- Alan Wiener. Yale University, New Haven CT

"Law and the Genetics of Identity"

- Sir Alec Jeffries. University of Leicester, Leicester U.K.
- Lawrence Gostin. Professor of Law, Georgetown University, Washington D.C.
- Kenneth Kidd. Professor of Law, Yale University, New Haven CT

- Mary Claire King, University of Washington at Seattle, Seattle WA
- Mark Stolorow, Director of Operations, Cellmark Diagnostics, Inc., Germantown MD
- Peter Neufeld, Co-Director, The Innocence Project at Yeshiva University's Benjamin Cordoza School of Law, New York NY

"The Human Genome Project: Mapping the Future"

- Francis Collins, MD. National Human Genome Research Institute, Bethesda MD
- Vicky Whittemore. Vice President, Medical and Scientific Affairs, National Tuberous Sclerosis Association, Crofton MD
- Georgia Dunston. Microbiology, Howard University, Washington DC
- Thomas Murray. Director, Center for Biomedical Ethics, Case Western Reserve University, Shaker Heights OH

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THE DNA FILES
CARRIAGE LIST

STATION	MARKET	AIR DATE AND TIME
KBBI-AM	Homer, Alaska	Sundays 1/3/99-2/28/99 Noon
KRBD-FM	Ketchikan, Alaska	Sundays 1/3/99 - 2/28/99 8:00pm
KJZZ-FM	Phoenix, Arizona	Saturdays 11/7-1/2/99 3:00pm
KUAR-FM	Little Rock, Arkansas	Weekdays 11/9-11/20 Noon
KASU-FM	State College, Arkansas	Thursdays 1/7/99 -2/25/99 6:00pm
KHSU-FM	Arcata, California	Saturdays 4/3/99 – 5/29/99 1:00pm
KVPR-FM	Fresno, California	Saturdays 11/7 - 1/2/99 6:00pm
KPRX-FM	Bakersfield, California	Saturdays 11/7 - 1/2/99 6:00pm
KPCC-FM	Los Angeles, California	Weekdays 12/28 - 12/31 9:00am-11:00am
KZYX-FM	Philo, California	Fridays 11/6 - 1/1/99 1:00pm
KZYZ-FM	Willets, California	Fridays 11/6 - 1/1/99 1:00pm
KPBS-FM	San Diego, California	Weekdays 11/9-11/20 8:00pm
KQED-FM	San Francisco, California	Thursdays 3/4/99-4/29/99 8:00pm
KCBX-FM	San Luis Obispo, California	Fridays 11/6 - 1/1/99 11:00am
KAJX-FM	Aspen, Colorado	Thursdays 11/12 - 1/7/99 11:00am
KBUT-FM	Crested Butte, Colorado	Wednesdays 11/11-1/6/99

KSUT-FM	Ignacio, Colorado	Sundays 11/8 - 1/3/99 8:00pm
WAMU-FM	Washington, DC	Weekdays 12/17 - 12/30 8:00pm
WUFT-FM	Gainesville, Florida	Tuesdays 2/2/99-3/30/99 12:15pm
WJUF-FM	Inverness, California	Tuesdays 2/2/99-3/30/99 12:15pm
WFSU-FM	Tallahassee, Florida	11/9-11/12 & 11/16-11/19 9:00pm (11/9 8:00pm-10:00pm)
WSFW-FM	Panama City, Florida	11/9-11/12 & 11/16-11/19 9:00pm (11/9 8:00pm-10:00pm)
WXEL-FM	West Palm Beach, Florida	Sundays 1/3/99 - 2/28/99 2:00pm
WBEZ-FM	Chicago, Illinois	Weekdays 12/28/98-1/8/99
WIUM-FM	Macomb, Illinois	Wednesdays 11/11 - 1/6/99 12:00 Noon
WIUW-FM	Warsaw, Illinois	Wednesdays 11/11 - 1/6/99 12:00 Noon
WUIS-FM	Springfield, Illinois	Weekdays 11/9 - 11/21 Noon
WIPA-FM	Pittsfield, Illinois	Weekdays 11/9 - 11/21 Noon
WILL-AM	Urbana, Illinois	Saturdays 11/7-1/2/99 3:00pm
WFYI-FM	Indianapolis, Indiana	Sundays 3/21/99-5/16/99
WOI-AM	Ames/Des Moines, Iowa	Weekdays 11/9-11/20
KTPR-FM	Fort Dodge, Iowa	Weekdays 11/9-11/20 5:00pm
WSUI-AM	Iowa City, Iowa	Weekdays 11/10-11/20 12:00 Noon
KMUW-FM	Wichita, Kansas	Friday 11/20 9:00am

WKMS-FM	Murray, Kentucky	Sundays 11/8 - 1/3/99
WMEA-FM	Portland, Maine	Weekdays 11/17-11/19 1:00pm
WMEH-FM	Bangor, Maine	Weekdays 11/17-11/19 1:00pm
WMED-FM	Calais, Maine	Weekdays 11/17-11/19 1:00pm
WMEF-FM	Ft. Kent, Maine	Weekdays 11/17-11/19 1:00pm
WMEM-FM	Presque Isle , Maine	Weekdays 11/17-11/19 1:00pm
WMEW-FM	Waterville, Maine	Weekdays 11/17-11/19 1:00pm
WBUR-FM	Boston, Massachusetts	Weekdays 11/10 - 11/20 8:00pm
WCCT-FM	Harwich, Massachusetts	Weekdays 11/10 - 11/20 8:00pm
WSDH-FM	Sandwich, Massachusetts	Weekdays 11/10 - 11/20 8:00pm
WKKL-FM	West Barnstable, Massachusetts	Weekdays 11/10 - 11/20 8:00pm
WBUR-AM	West Yarmouth, Massachusetts	Weekdays 11/10 - 11/20 8:00pm
WRNI-AM	Providence, Rhode Island	Weekdays 11/10 - 11/20 8:00pm
WGBH-FM	Boston, Massachusetts	Sunday 6/6/99-8/8/99 6:00pm
WUMB-FM	Boston, Massachusetts	tba
WFPB-FM	Falmouth, Massachusetts	tba
WBPR-FM	Worcester, Massachusetts	tba
WFPB-AM	Orleans, Massachusetts	tba
WUOM-FM	Ann Arbor/Detroit, Michigan	Mondays 1/4/99 - 3/1/99 8:00pm

WFUM-FM	Flint, Michigan	Mondays 1/4/99 - 3/1/99 8:00pm
WVGR-FM	Grand Rapids, Michigan	Mondays 1/4/99 - 3/1/99 8:00pm
WMUK-FM	Kalamazoo, Michigan	Sundays 11/8 - 1/3/99 1:00pm
WCMU-FM	Mount Pleasant, Michigan	Monday, Tuesday, Wednesday 1/11 12 1/11, 1/12, 1/13, 1/18, 1/19, 1/20 1/25, 1/26, 1/27 10:00pm
WCML-FM	Alpena, Michigan	Monday, Tuesday, Wednesday 1/11 12 1/11, 1/12, 1/13, 1/18, 1/19, 1/20 1/25, 1/26, 1/27 10:00pm
WUCX-FM	Bay City, Michigan	Monday, Tuesday, Wednesday 1/11 12 1/11, 1/12, 1/13, 1/18, 1/19, 1/20 1/25, 1/26, 1/27 10:00pm
WCMW-FM	Harbor Springs, Michigan	Monday, Tuesday, Wednesday 1/11 12 1/11, 1/12, 1/13, 1/18, 1/19, 1/20 1/25, 1/26, 1/27 10:00pm
WCMZ-FM	Sault Ste. Marie, Michigan	Monday, Tuesday, Wednesday 1/11 12 1/11, 1/12, 1/13, 1/18, 1/19, 1/20 1/25, 1/26, 1/27 10:00pm
WGVU-AM	Grand Rapids, Michigan	tba
WCAL-FM	Northfield, Minnesota	tba
KNOW-FM	St. Paul, Minnesota	Summer 1999 tba
KNBJ-FM	Bemidji, Minnesota	Summer 1999 tba
KBPR-FM	Brainerd, Minnesota	Summer 1999 tba
KLNI-FM	Decorah, Iowa	Summer 1999 tba
WSCN-FM	Duluth, Minnesota	Summer 1999 tba

WGGL-FM	Houghton, Michigan	Summer 1999 tba
KXLC-FM	La Crescent, Minnesota	Summer 1999 tba
KCCD-FM	Moorehead, Minnesota	Summer 1999 tba
KZSE-FM	Rochester, Minnesota	Summer 1999 tba
KNGA-FM	St. Peter, Minnesota	Summer 1999 tba
KNSR-FM	St. Joseph, Minnesota	Summer 1999 tba
KNTN-FM	Thief River Falls, Minnesota	Summer 1999 tba
WIRR-FM	Virginia-Hibbing, Minnesota	Summer 1999 tba
KNSW-FM	Worthington, Minnesota	Summer 1999 tba
KOPN-FM	Columbia, Missouri	Weekdays 11/9 - 11/19 4:00pm
KCUR-FM	Kansas City, Missouri	tba
KEMC-FM	Billings, Montana	Wednesdays 3/3/99-4/28/99 7:00pm
KBMC-FM	Bozeman, Montana	Wednesdays 3/3/99-4/28/99 7:00pm
KIOS-FM	Omaha, Nebraska	Mondays in 11/98 & 12/98 Noon
KNPR-FM	Las Vegas, Nevada	Weekdays 11/10 - 11/20 7:00pm
KLNR-FM	Panaca, Nevada	Weekdays 11/10 - 11/20 7:00pm
KTPH-FM	Tonopah, Nevada	Weekdays 11/10 - 11/20 7:00pm

WNJT-FM	Trenton, New Jersey	Sundays 3/7/99-5/2/99 9:00pm
WNJN-FM	Atlantic City, New Jersey	Sundays 3/7/99-5/2/99 9:00pm
WNJS-FM	Berlin, New Jersey	Sundays 3/7/99-5/2/99 9:00pm
WNJB-FM	Bridgeton, New Jersey	Sundays 3/7/99-5/2/99 9:00pm
KUNM-FM	Albuquerque, New Mexico	Sundays 1/3/99 - 2/28/99 11:00am
WAMC-FM	Albany, New York	Weekdays 11/16-11/27 10:00am
WCAN-FM	Canajoharie, New York	Weekdays 11/16-11/27 10:00am
WAMQ-FM	Great Barrington, Mass.	Weekdays 11/16-11/27 10:00am
WAMK-FM	Kingston, New York	Weekdays 11/16-11/27 10:00am
WOSR-FM	Middletown, New York	Weekdays 11/16-11/27 10:00am
WCEL-FM	Plattsburgh, New York	Weekdays 11/16-11/27 10:00am
WANC-FM	Ticonderoga, New York	Weekdays 11/16-11/27 10:00am
WSKG-FM	Binghamton, New York	Saturdays 11/7 - 1/2/99 12:00 Noon
WSQG	Ithaca, New York	Saturdays 11/7 - 1/2/99 12:00 Noon
WSQC-FM	Oneonta, New York	Saturdays 11/7 - 1/2/99 12:00 Noon
WSQE-FM	Elmira, New York	Saturdays 11/7 - 1/2/99 12:00 Noon
WSLU-FM	Canton, New York	Saturdays 4/24 - 6/19/99 4:00pm

WXLH-FM	Blue Mountain Lake, NY	Saturdays 4/24 - 6/19/99 4:00pm
WSLO-FM	Malone, New York	Saturdays 4/24 - 6/19/99 4:00pm
WXLG-FM	North Creek, New York	Saturdays 4/24 - 6/19/99 4:00pm
WXLU-FM	Peru, New York	Saturdays 4/24 - 6/19/99 4:00pm
WSLL-FM	Saranac Lake, New York	Saturdays 4/24 - 6/19/99 4:00pm
WSLJ-FM	Watertown, New York	Saturdays 4/24 - 6/19/99 4:00pm
WNYC-AM	New York, New York	Weekdays 11/16-11/20 3:00pm
WXXI-AM	Rochester, New York	Fridays 11/6-1/1/99 9:00pm
WQCS-FM	Ashville, North Carolina	need more info
WUNC-FM	Chapel Hill, North Carolina	tba
WFAE-FM	Charlotte, North Carolina	Weekdays 11/16-11/20 8:00pm
WFHE-FM	Hickory, North Carolina	Weekdays 11/16-11/20 8:00pm
WFSS-FM	Fayetteville, North Carolina	tba
KDSU-FM	Fargo, North Dakota	tba
KUND-FM	Grand Forks, North Dakota	tba
KCND-FM	Bismarck, North Dakota	tba
KPPR-FM	Williston, North Dakota	tba
KDPR-FM	Dickinson, North Dakota	tba
KPRJ-FM	Jamestown, North Dakota	tba
KMPR-FM	Minot, North Dakota	tba

WYSO-FM	Yellow Springs/Dayton, Ohio	Saturdays 3/6/99 – 4/24/99 Noon
WYSU-FM	Youngstown, Ohio	Sundays 11/8 - 1/3/99 6:00am
KCCU-FM	Lawton, Oklahoma	Weekdays 11/9/98-11/19/98 Noon
KLCU-FM	Ardmore, Oklahoma	Weekdays 11/9/98-11/19/98 Noon
KLCC-FM	Eugene, Oregon	Sun - Thurs 11/8 - 11/19 6:30pm
KLCO-FM	Newport, Oregon	Sun - Thurs 11/8 - 11/19 6:30pm
WHYY-FM	Philadelphia, Pennsylvania	Thurs 1/7/99 - 3/11/99 Noon
WPSU-FM	State College, Pennsylvania	Mondays 5/4/99 -7/1/99 1:00pm
KUT-FM	Austin, Texas	Thursdays 12/3/98 - 1/28/98 7:00pm
KUTX-FM	San Angeleo, Texas	Thursdays 12/3/98 - 1/28/98 7:00pm
KERA-FM	Dallas, Texas	Sundays starting 1/3/99 6:00pm
KPFT-FM	Houston, Texas	Summer 1999 tba
KUSU-FM	Logan, Utah	Sundays 2/28/99 – 4/25/99 1:00pm
KPCW-FM	Salt Lake City, Utah	Mondays 11/9-1/4/99 11:00am
KUER-FM	Salt Lake City, Utah	Sundays 11/8 - 1/3/99 7:00pm
WVPR-FM	Windsor, Vermont	Sundays 11/8 - 1/3/99 6:00pm
WVPS-FM	Burlington, Vermont	Sundays 11/8 - 1/3/99 6:00pm
WRVT-FM	Rutland, Vermont	Sundays 11/8 - 1/3/99

		6:00pm
WCVE-FM	Richmond, Virginia	Weekdays 11/9 - 11/19 1:00pm
KUOW-FM	Seattle, Washington	11/9-11/19 10:00pm
KPBX-FM	Spokane, Washington	Thursdays 1/7/99-2/25/99 Noon
KSFC-FM	Spokane, Washington	Thursdays 1/7/99-2/25/99 Noon
WUWM-FM	Milwaukee, Wisconsin	November dates tba Noon
KUWR-FM	Laramie, Wyoming	Weekdays 11/9 - 11/20 1:00pm
KUWJ-FM	Jackson, Wyoming	Weekdays 11/9 - 11/20 1:00pm
KUWZ-FM	Rock Springs, Wyoming	Weekdays 11/9 - 11/20 1:00pm

COMING THIS NOVEMBER!

Is Our Fate in Our Genes?

THE DNA FILES

This is just one of the many questions that will be explored in THE DNA FILES, a landmark public radio documentary series coming this fall from NPR.

Hosted by John Hockenberry

- Nine one-hour documentaries compatible with NPR Newscasts
- Companion *Talk of the Nation*® Science Friday
- Outreach, interactive web site

For more information contact The Ken Mills Agency
tel: 612.513.9988 mills015@tc.umn.edu

soundvision PRODUCTIONS

npr℠

The DNA Files is produced by SoundVision Productions, Berkeley, California strp@aol.com
Major funding provided by the National Science Foundation, the Department of Energy, and the Alfred P. Sloan Foundation

THE DNA FILES

A Message to Public Radio from John Hockenberry

John Hockenberry
NBC News
30 Rockefeller Plaza
New York, NY 10112

Dear Public Radio Colleagues,

I want to write and tell you how enthusiastic I am about *The DNA Files* project and how much I hope that the Public Radio system receives it with the excitement it deserves. Much as digital technology has wrought a conceptual revolution in how we communicate and use our senses, so has the biotech world begun a parallel revolution that will undoubtedly reconfigure human notions of body and soul. For some reason, people have always seemed to have more of a feel for digital technology. Consequently, the media have exploded with coverage of the silicon universe while the biotech world remains a mysterious, esoteric sidebar. *The DNA Files* is an ambitious effort to give people an intuitive feel for the changes in medicine, law enforcement, biology, and elsewhere that are remaking our world.

Through entertaining creative storytelling I hope we can get listeners as excited about the implications of the human genome as we all are. The development of an informed lay public is the best way to guard against the abuses and mistakes that seem to make terrific plots for scary movies. The popular myths about genetics and microbiology at the molecular level are entertaining but tell us nothing of the fabric of the changes to come. *The DNA Files* is more than a great radio series. It's a crucial public service. I'm honored to be a part of it and hope the public radio system gives it a hard, critical listen and ultimately a ringing endorsement.

Very truly yours,

John Hockenberry

soundvision PRODUCTIONS

npr℠

For more information contact The Ken Mills Agency tel: 612.513.9988 mills015@tc.umn.edu

The DNA Files is produced by SoundVision Productions, Berkeley, California strp@aol.com
Major funding provided by the National Science Foundation, the Department of Energy, and the Alfred P. Sloan Foundation

Who's Talking About New Discoveries in Genetic Science?

JOHN HOCKENBERRY on THE DNA FILES

Along with guest scientists and people like you and me, asking:

- Could your DNA information be used to deny you insurance or employment?
- How did human life begin and evolve? How are people different and the same?
- How might prenatal genetic tests prevent disease later in life?

AND MUCH, MUCH MORE...

The DNA Files:

- **Nine one-hour documentaries**
- **Digital Stereo Explorations of the Science and Social Implications of Genetics**
- **Excellent local underwriting potential**

COMING YOUR WAY IN FALL, 1998

Produced by SoundVision Productions

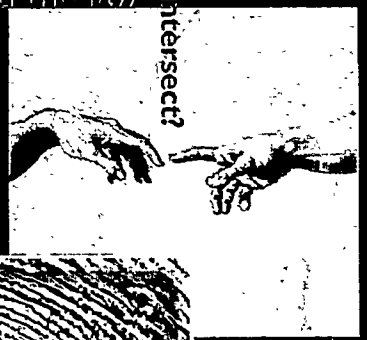
Distributed by National Public Radio®

Call The Ken Mills Agency at 612.513.9988 or email mills015@tc.umn.edu. Or write to SOUNDVISION PRODUCTIONS at 2991 Shattuck Ave., Ste. 304, Berkeley, CA 94705 or email at strp@aol.com.

Major funding provided by the National Science Foundation, the Department of Energy and the Alfred P. Sloan Foundation

Q: Where do science, social policy, ethics and the law intersect?

A: ...In THE DNA FILES, an innovative radio series about the fascinating world of human genetics.



THE DNA FILES?

THE DNA FILES is a first-of-its-kind series of radio programs about the fascinating world of human genetics. Each hour-long program, to be distributed to public radio stations nationwide, has two goals:

*To demystify the science of genetics, by explaining scientific concepts and research methods in terms that the public radio listener can understand.

*To explore how the new discoveries in genetics are changing the face of health care, social policy, technology and the law.

THE DNA FILES goes behind the scenes to bring you the scientists, ethicists, policy makers and ordinary people caught up in the whirlwind of new genetic discoveries. Programs in the series cover topics like:

*DNA and Behavior: Is Our Fate Written in Our Genes?
This pilot program explores the controversial field of behavioral genetics by looking at various methodologies used, such as linkage and twin studies, to consider the genetic basis for qualities such as homosexuality, obesity and aggression. Some of the voices you'll hear in this program include:

Garland Allen, Professor of the History of Science, Dept. of Biology, Washington University, St. Louis
Thomas Bouchard Jr., psychologist, University of Minnesota, Minneapolis
William Byne, Director, Neuro-Anatomy Laboratory of Neuro-Psychiatric Disease, Mt. Sinai Medical Center, New York
Francis Collins, Director, National Center for Human Genome Research, National Institutes of Health
David Cummings, molecular geneticist, City of Hope Medical Center, Duarte CA
Troy Duster, Professor of Sociology, UC Berkeley
Jeff Friedman, molecular geneticist, Rockefeller University, New York
Dean Hamer, behavioral geneticist, National Cancer Institute
Richard Lewontin, biologist, Harvard University
Ted Peters, Professor of Christian Theology, Pacific Lutheran Seminary, Berkeley
Peter Schonemann, psychometrician, Purdue University
Susan Yanovski, Director, Obesity and Eating Disorders Program, National Institute of Diabetes and Digestive and Kidney Diseases

*Genetic Testing: Do You Really Want to Know Your Future
*Gene Therapy: Medicine For Our Genes
DNA and the Law
*The Commercialization of Genetic Information
*The Search for a Breast Cancer Gene

Produced with the talents of the best radio producers in the country, THE DNA FILES will be distributed nationally through PRI — Public Radio International.

WHAT IS THE GENOME RADIO PROJECT?
The Genome Radio Project is the creative force behind THE DNA FILES. In addition to producing lively and informative radio programs, the Genome Radio Project prepares resource guides that feature lists of genetics-related organizations, suggested readings, Internet resources, glossaries, and much more. The resource guides, as well as transcripts, are available on the Internet.

Audio cassettes and transcripts can be requested by calling 800.735.0230.

Genome Radio Project
1929 Martin Luther King Jr. Way
Berkeley CA 94703
510.848.6767x264
Fax 510.848.0311
www.arpany.com

The DNA Files:
Unraveling the Mysteries of Genetics
Documentary Descriptions

"The Human Genome Project: Mapping the Future"
The mapping of the entire human genome has been called the greatest biological challenge in human history with perhaps the most far-reaching implications for human health and evolution. What sorts of structural changes in society will we see as a result of this new knowledge? What new ideas will develop about property – ownership and control of our own bodies? What role should government play, if any, in regulating the new resultant genetic technologies and their medical applications? What new visions, such as human cloning, might we see just around the corner and how will they affect us?

"DNA and Behavior: Is Our Fate In Our Genes?"
What role do genes play in influencing human behavior? What are the limits of today's research on the link between genetics and behavior and what is the media's role in reporting the results? From aggression to obesity; homosexuality to intelligence – connecting genes to behavior is fraught with controversy. This program explores research on alcoholism, homosexuality and novelty seeking, illustrating them with representative scientific methodologies in the field of "behavioral genetics."

"Prenatal Genetic Testing: Do You Really Want to Know Your Baby's Future?"
This documentary will describe how prenatal genetic tests work and explore their practical applications. The program will examine diagnostic methods such as amniocentesis and chorionic villus sampling and evaluate their benefits and risks. Attendant controversial social issues, such as the quest for "perfect" children, and gender selection, will be explored.

"Predictive Genetic Tests: Do You Really Want to Know Your Future?"
This program will describe which traits and disease potentials that can be ascertained by genetic testing, as well as the ethical, legal and social issues raised by such testing. It will discuss the various diagnostic methods such as genetic marker analysis and DNA sequencing and how are these techniques are used in clinical settings. Examples of past genetic screening programs, revealing social prejudices and government policy biases, may be explored.

"Gene Therapy: Medicine for Your Genes"
Follow the case of one man with an incurable form of lung cancer as he takes part in gene therapy treatment, an experimental form of medicine that attempts to eradicate disease by treating it on the genetic level. Hear from doctors, researchers and ethicists, as well as the patient himself, about both the promise and the limits of gene therapy. This new technique is being used to treat cystic fibrosis, heart disease, cancer and other disease. And while around 3,000 people have been treated with gene therapy, not one has yet been "cured." What can people realistically expect from what is being called a "miracle medicine"?

"Law and the Genetics of Identity"
Everyone knows DNA tests are used in all sorts of court cases, from murder trials to paternity suits to patent claims on genetically altered seeds. But do you know how the tests are actually done? Should you trust them? Where do those impressive-sounding statistics ("one in a billion, one in twelve billion") come from and what do they really mean? Do lawyers, judges and juries really understand DNA evidence? Are DNA databanks a threat to our civil liberties?

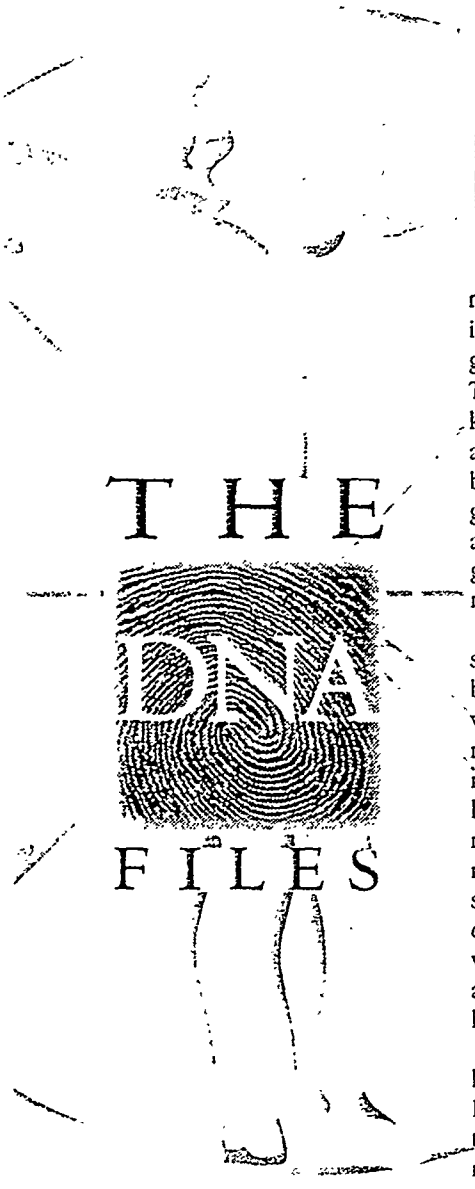
"Genetics and Biotechnology: DNA in the Marketplace"
The pharmaceutical industry has been touted as one of the fastest growing arenas in the economy. Now, pharmacogenetics, with its huge potential to create new medicines from countless combinations of plant, animal and human genes, looks to be the mother lode where science meets high finance. Will your genes become patentable? Who will own the sequence to the human genome? Will the use of this new information serve society, or be controlled to benefit only a few?

"The Genetics of Human Evolution: Where Did We Come From? Where Did We Go?"
What can our genes tell us about our origins? Many scientists think that – if you know how to read it – DNA is a history book that tells the story of the origins of life on earth, our relationship to other forms of life and whether there are such things as "human races." We can even learn about events in our recent history such as the spread of agriculture through Europe, the migrations of people to the Americas, and possible positive after-effects of the Black Plague.

"Plants, Animals, and Transgenics: A Tomato by Any Other Name"
From hog barn to science lab to corporate office, the story of transgenic plants and animals sounds on the one hand like the mundane continuation of the basic genetic breeding that has been practiced by farmers and ranchers for centuries. On the other hand, new technologies can now actually alter the DNA, the genetic code, for an organism on a much more fundamental level, and at a much faster pace than traditional breeding over generations would allow. How will genetic engineering alter the ecological balance? Will it alter humanity's relationship to nature irrevocably?

Special Series Examines

Human Genes



Get ready to learn more about the human genome. WAMU will broadcast *The DNA Files*, a landmark public radio series hosted by veteran broadcaster John Hockenberry. The nine-part series, which includes a feature by WAMU's Kathy Merritt, begins at 8 p.m. Thursday, December 1st and continues at 8 each weeknight through December 30, except for December 24.

The DNA Files explores how DNA research and new gene technologies are changing medicine, psychology, religion, law, agriculture and the shape of society. Topics covered in the series include DNA and behavior, prenatal genetic testing, predictive genetic tests, gene therapy, the genetics of identity, biotechnology, genetic evolution and transgenics. The series investigates structural changes in society we may see as a result of our new knowledge and new ideas about our control of our own bodies. It considers what role government should play, if any, in regulating the new genetic technologies and their medical applications.

Hockenberry, now a correspondent with *Dateline NBC*, believes the biotech revolution will reconfigure human notions of body and soul, much as digital technology has wrought a conceptual revolution in how we communicate and use our senses. He says, "Through entertaining, creative storytelling, I hope we can get listeners excited about the implications of the human genome."

Hockenberry is a well-known voice in public radio. Before moving to network television in 1993, he spent more than a decade with NPR as a general assignment reporter, Middle East correspondent and host of several programs. Hockenberry served as anchor of *Talk of the Nation*, and his reports were heard often on *All Things Considered*. He is the author of *Moving Violations: War Zones, Wheelchairs and Declarations of Independence*, a memoir of his life as a foreign correspondent and of overcoming obstacles.

The DNA Files is produced by SoundVision Productions and distributed by National Public Radio. ■

WAMU's news director Kathy Merritt was one of the reporters who contributed to *The DNA Files*. Her feature is part of "DNA and Behavior," the second program in the series. "My story tried to link behavior to genes," says Merritt. "A local researcher, Dr. Dean Hamer at NIH in Bethesda, conducted a study that showed people with a certain form of the D4DR gene have high novelty-seeking or thrill-seeking behavior. Similar findings came from another study conducted in Israel, but other researchers have not had success in replicating the findings. The piece gives both sides of the story.

Kathy Merritt

"It was fascinating to talk with scientists and cover a topic that's just beginning to take shape." ■

FOR IMMEDIATE RELEASE

OCTOBER 22, 1998

CONTACT: Gayle G. Chisholm
726-2224

klcc 89.7FM NPR National Public Radio

THE DNA FILES

THE DNA FILES TO AIR ON KLCC 89.7 FM

9-Part Landmark Series Begins November 8

Beginning November 8, KLCC 89.7 FM will broadcast *THE DNA FILES*, a landmark documentary series about the latest developments in genetic science. The series, which runs through November 19, is hosted by journalist John Hockenberry.

These nine 1-hour documentaries go deeper than the headlines of the day, probing ethical questions such as whether having the technology to alter nature gives us the right to do so, whether insurance companies will demand prenatal testing, and how DNA has changed law enforcement. KLCC will provide the local angle with a special edition of *Critical Mass* on November 15.

Host John Hockenberry is currently a correspondent for *Dateline NBC*. He began his journalistic career in Eugene as a volunteer news reporter at KLCC during the 1970's. Hockenberry believes the biotech revolution will undoubtedly reconfigure human notions of body and soul, much as digital technology has wrought a conceptual revolution in how we communicate and use our senses. He says, "Through entertaining creative storytelling I hope we can get listeners excited about the implications of the human genome... the development of an informed lay public is the best way to guard against the abuses and mistakes that seem to make plots for scary movies."

THE DNA FILES is produced by SoundVision Productions of Berkeley, California, and distributed by National Public Radio (NPR). Visit the KLCC website at **www.klcc.org** for further information on this series.

Program times and descriptions are as follows:

Part 1 - Sun, 11/8, Noon: *The Human Genome Project: Mapping the Future*
Part 2 - Mon, 11/9, 6:30 p.m.: *DNA and Behavior: Is Our Fate In Our Genes?*
Part 3 - Tues, 11/10, 6:30 p.m.: *Prenatal Genetic Testing: Do You Really Want to Know Your Baby's Future?*
Part 4 - Wed, 11/11, 6:30 p.m.: *Predictive Genetic Tests: Do You Really Want to Know Your Future?*
Part 5 - Thurs, 11/12, 6:30 p.m.: *Gene Therapy: Medicine for Your Genes*
Local - Sun, 11/15, Noon: Alan Siporin explores the local angle of this topic during KLCC's *Critical Mass*
Part 6 - Mon, 11/16, 6:30 p.m.: *Law and the Genetics of Identity*
Part 7 - Tues, 11/17, 6:30 p.m.: *Genetics and Biotechnology: DNA in the Marketplace*
Part 8 - Wed, 11/18, 6:30 p.m.: *The Genetics of Human Evolution: Where Did We Come From? Where Did We Go?*
Part 9 - Thurs, 11/19, 6:30 p.m.: *Plants, Animals and Transgenics: A Tomato By Any Other Name*

4000 East 30th Avenue ▪ Eugene, OR 97405-0640
(541) 726-2224 ▪ (800) 922-3682 ▪ FAX (541) 744-3962 ▪ e-mail: klcc@lanecc.edu

The Shotgun Approach

▶ ABATE
From Page B1

someone of Fromm's, shall we say caliber, in the neighborhood, to help state the industry's case.

■ **THE DNA FILES:** Speaking of genetically engineered crops, KQED-FM (88.5) will broadcast an hour-long special report on the subject Thursday evening from 8 to 9 p.m.

The report, "Plants, Animals and Transgenics: A Tomato by Any Other Name," is the fourth in a nine-part series on how DNA technology works and the questions it raises.

Journalist John Hockenberry narrates the reports, which were produced by SoundVision Productions, a nonprofit group in Berkeley. KQED's Web site *(www.kqed.org)* lists show dates and descriptions.

After SoundVision executive producer Bari Scott alerted me to the series, I tuned in to show No. 3, on prenatal genetic testing. The excellent report made me sorry I'd missed the earlier sessions on the human genome project. But several of the most provocative issues have yet to be aired, including the question of whether genes determine our fate.

■ **JOB ACTION:** Here's a fresh angle on the report I filed March 1 about the layoff of a third of the staff at Scios Inc. in Mountain View.

On D-day, company officials gathered the 80 axed employees in a meeting room to discuss severance issues. Someone stood up, looked around at all the faces, and said, "Would everybody here like to stay in touch?"

The nods that went around the room led to the creation of a Web site, *www.jaws.com/scios*, maintained by analytical chemist Enona Gopinath, one of those squeezed out in Scios's belt-tightening.

Gopinath and her colleagues have used the site to exchange messages and share job leads. Scios alumni at other firms have posted alerts on the site about job openings.

The job market for scientists isn't bad right now, Gopinath said. But it's never easy to be forced into a job hunt. And at a certain professional level it gets tricky finding the right opening. So the site is low key, and dignified, like the jobseekers themselves. No posters reading: "Will sequence genes for food."

It's just a group of professionals, banding together to zig past one of life's unexpected zags.

Look for BioScope every Monday in the Business section. Send your bio-feedback to Tom Abate by e-mail, abate@sfgate.com; *fax, (415) 543-2482; or phone, (415) 777-6213.*

Grass May Be Tough, But It's No Match for a Powerful Sh

How do you get DNA into a plant? Blow a hole in it

SFC 3/22/99

BIOSCOPE

Tom Abate

When plumbers or contractors encounter a tough problem they often reach for a bigger wrench or hammer.

A similar logic apparently prevails in the submicroscopic world of genetically engineered plants. With one difference. When agricultural bioscientists encounter a defiant grass cell, some grab a shotgun.

Seriously. Biotech industry lore credits former Stanford researcher Mike Fromm with showing his colleagues the way to science through superior firepower.

I caught up last week with Fromm, who now heads a private biotech firm in Hayward, for a first-hand account of his shotgun technique.

It seems that in the late 1980s, bioscientists ran into a problem. Genetic engineering involves piercing the walls of target cells and introducing altered DNA into the cells' interior.

Medical researchers working with animal or human cells turned out to have it relatively easy. They found that the walls of animal cells could be pierced by chemical or electric shocks, which opened tiny holes through which altered DNA could ooze into target cells.

But when ag researchers tried to use these same techniques to genetically engineer corn, wheat and other grass cells, they ran into unexpected trouble.

"At a microscopic scale, the wall of a grass cell is like a concrete bunker," Fromm said.

In research conducted between 1987 and 1990, when he worked at Stanford and UC Berkeley, Fromm collaborated with scientists at Cornell University to create a gun designed to crack that bunker.

This bio-shotgun – which had a seven-inch barrel, about a quarter the normal length – fired a plastic shell bearing thousands of microscopic pellets, which had been soaked in genetically altered DNA.

He aimed the gun at a petri dish covered by a sheet of bulletproof plastic. In the center of this bullet-proof cover he drilled a hole one-eighth inch in diameter. Below, on the surface of the petri dish, he smeared grass cells.

He aimed the gun, like a deadly microscope, at the hole, pulled the trigger, and BANG! The plastic stopped the shell casing, but some of the microscopic pellets sped through the one-eighth-inch hole, pierced the walls of the grass cells below, and delivered their DNA payload to the cells' interior. Success!

Refined versions of the shotgun technique have been used ever