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6. AUTHOR(S)

Dr Martin Zatz

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Dr Genevieve M. Haddad
AFOSR/NL
110 Duncan Avenue, Suite B115
Bolling AFB DC 20332-0001

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13. ABSTRACT (Maximum 200 words)

The objective of this conference was to bring together scientists so they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists. The quality of all of the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

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1991 GORDON RESEARCH CONFERENCES

on

PINEAL CELL BIOLOGY

Grant No. AFOSR-91-0279

Final Progress Report

This grant provided essential financial support for the Gordon Research Conference on Pineal Cell Biology which was held August 12-16, 1991 at Proctor Academy in Andover, New Hampshire. The objective of this conference was to bring together scientists so they could exchange recent research results and the conference provided a mechanism for the development of close interactions between these scientists.

The conference was attended by 81 conferees. There were participants representing academic and government institutions. In addition, there were attendees from Canada, China, England, The Netherlands, Germany, Spain, Scotland, France, and Sweden.

The quality of all of the lectures was exceptionally high and considerable discussion followed each lecture. Many of the conferees expressed very favorable comments about the intellectual stimulation provided by this conference.

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GORDON CONFERENCE ON PINEAL CELL BIOLOGY 1991

TUESDAY, August 13

EVENING SESSION: (8:00) MELANOPHORES AND MELATONIN MECHANISMS

- 8:00 - 8:15 Leader: S. Reppert, Harvard University
- 8:30 - 9:00 Speakers: M. Rollag, Uniformed Services University of the Health Sciences
Unique aspects of the melanophore model system in the study of melatonin action.
- 9:15 - 9:45 D. Suggan, University of London
Melatonin: structure activity relationships.

WEDNESDAY, August 14

MORNING SESSION: (9:00) PHOTIC REGULATION OF THE PINEAL

- 9:00 - 9:15 Leader: M. Menaker, University of Virginia
- 9:30 - 10:00 Speakers: B. Foster, University of Virginia
Photobiology of non-visual photoreceptors.
- 10:15 - 10:30 Coffee Break
- 10:30 - 11:00 H. Meissl, Max Planck Institute for Physiology
Photoreceptor function of the pineal organ.
- 11:15 - 11:45 J. Takahashi, Northwestern University
Cell and molecular regulation of circadian rhythms in the chick pineal.

EVENING SESSION: (8:00) RETINAL MELATONIN

- 8:00 - 8:15 Leader: H. Underwood, North Carolina State University
- 8:30 - 9:00 Speakers: G. Cahill, University of Kansas
Regulation of melatonin in the retina: Not just another pineal gland.
- 9:15 - 9:45 M. Pierce, Northwestern University
Melatonin regulation in retinal cell culture.

THURSDAY, August 15

MORNING SESSION: (8:45) NEURAL REGULATION OF THE SCN AND PINEAL

- 8:45 - 9:00 Leader: B. Zigmond, Case Western Reserve University
- 9:10 - 9:35 Speakers: B. Moore, University of Pittsburgh
Neural regulation of pineal function in mammals.
- 9:50 - 10:15 V. Cassone, Texas A&M University
Neural modulation of the avian pineal gland.
- 10:30 - 10:45 Coffee Break
- 10:45 - 11:10 J. Mollitt, Georgetown University
New and old transmitter candidates for the retinohypothalamic tract.
- 11:25 - 11:50 C. Colwell, University of Virginia
NMDA receptors may mediate the effects of light on the circadian and reproductive systems of the golden hamster.

GORDON CONFERENCE ON PINEAL CELL BIOLOGY 1991

THURSDAY, August 15

EVENING SESSION: (8:00) BUSINESS MEETING AND PLENARY LECTURE

8:00 - 8:30

Business Meeting

8:30 - 9:00

Speaker: J. Axelrod, National Institute of Mental Health
From the pineal gland to signal transduction.

FRIDAY, August 16

MORNING SESSION: (8:45) PHOTOPERIODISM

8:45 - 9:00

Leader: R. Reiter, University of Texas, San Antonio

9:10 - 9:35

Speakers: E. Bittman, University of Massachusetts

Sites and physiological consequences of melatonin binding in mammals.

9:50 - 10:15

B. Goldman, University of Connecticut

Melatonin: A single hormone regulates a variety of photoperiodic responses.

10:30 - 10:45

Coffee Break

10:45 - 11:10

M. Hastings, University of Cambridge

How is the melatonin signal timed?

11:25 - 11:50

M. Stetson, University of Delaware

Prenatal and postnatal melatonin signals: Key components in the process of photoperiodic time measurement in hamsters.

Weekday meals:

BREAKFAST: 7:30 - 8:30

LUNCH: 12:30 - 1:30

DINNER: 6:00 - 7:00

GORDON RESEARCH CONFERENCES**PROCTOR ACADEMY****Pineal Cell Biology**

August 11-16, 1991

Chair- M. Zatz

Vice- R. Reiter

CONFEREES: CAMPUS ADDRESS; MAILING ADDRESS. WORK PHONE

- Vincent J. Aloyo: Burbank-West #21; Med. College of Pennsylvania, Dept. of Pharm, 3200 Henry Ave., Philadelphia, PA 19129. (215)-842-4685
- Meredith L. Applebury: Thoreau Porch Rm.; Univ. of Chicago, Visual Sci. Center, 939 East 57th St.-ERL 303, Chicago, IL 60637. (312)-702-0761
- Tamar Babila: Thoreau #52; Natl. Inst. of Health, Bldg. 36 Rm. 4A07, LDN/NICHD, Bethesda, MD 20892. (301)-496-6915
- R. Keith Barrett: Burbank-West #21; North Carolina St. Univ., Dept. of Zoology, Box 7617, Raleigh, NC 27695. (919)-737-2024
- Timothy J. Bartness: Burbank-East #2; Georgia St. Univ., Dept. of Bio., Univ. Plaza, Atlanta, GA 30303. (404)-651-2766
- Jean Bennett: Thoreau #1; Johns Hopkins Med. Sch., Wilmer Inst., 601 North Broadway, Baltimore, MD 21205. (313)-551-3476
- Jeffrey L. Benovic: Offsite; Fels Research Inst., 3420 North Broad St., Philadelphia, PA 19140. (215)-221-2348
- Eric L. Bittman: Burbank-West #3; Univ. of Massachusetts, Dept. of Zoology, Amherst, MA 01003. (413)-545-4344
- David E. Black: Burbank-West #24; Mary Imogene Bassett Hospital, Med. Research Inst., One Atwell Rd., Cooperstown, NY 13326-1394. (607)-547-3670
- George Brainard: Gannett #2; 815 Jefferson Med. College, Mt. Vernon Ave., Haddonfield, NJ 08033. (215)-955-7644
- Gregory M. Brown: Gannett #9; Clarke Inst. of Psych., 250 College St., Toronto, Ont. M5T 1R8, Canada. (416)-979-6940
- Robert C. Brown: Burbank-West #2; Northwestern Univ., Dept. of Pharm., 303 E. Chicago Ave., Chicago, IL 60611. (312)-503-1695
- Gregory M. Cahill: King #3; Univ. of Kansas Med. College, Dept. of Anatomy & Cell Bio., 39th & Rainbow Blvd., Kansas City, KS 66103. (913)-588-2716
- David Carter: King #2; Natl. Univ. of Singapore, Inst. of Mole. & Cell Bio., Kent Ridge, Singapore 0511, Singapore. 065-779-4560
- Vincent M. Cassone: Davis #2; Texas A&M Univ., Dept. of Bio., College Station, TX 77843-3258. (409)-845-2301
- Constance L. Chik: King #4; Univ. of Alberta, Rm. 362, HMRC, Edmonton, Alberta T6G 2S2, Canada. (403)-492-7421
- Nelson W.-S. Chong: Gannett #8; King's College, London, Phys. Group, BioMed. Sci., Div., Campden Hill Rd., Kensington, London W8 7AH, UK. 071-333-4407
- Chris Colwell: Johnson #2; Univ. of Virginia, Dept. of Bio., Gilmer Hall, Charlottesville, VA 22901. (804)-924-0884
- Bruno Cozzi: Burbank-East #1; Uniformed Serv. Univ., Dept. of Anatomy, 4301 Jones Bridge Rd., Bethesda, MD 20814. (301)-235-3212
- Cheryl M. Craft: Thoreau #31; Univ. of SouthWestern Texas, Med. Sch., Poly./4.102, 5323 Harry Hines Blvd., Dallas, TX 75325. (214)-688-6000
- Willern J. Degrip: Burbank-West #3; Univ. of Nijmegen, Dept. of BioChem., P.O. Box 9101, 6500 HB Nijmegen, Netherlands. 31-80-614263
- Susan J. Donohue: Farm #2; Natl. Inst. of Child Health & Human Devo. NIH, Bldg. 36, Rm. 4A07, Bethesda, MD 20892. (301)-496-6915

M.L. Dubocovich: Farm #3; Northwestern Univ. Med. Sch., Dept. of Pharm., 303 East Chicago Ave., Chicago, IL 60611. (312)-503-8005

Marilyn Duncan: Farm #4; Univ. of Missouri Med. Sch., Dept. of Anatomy & BeuroBio., M314 Med. Sci. Bldg., Columbia, MO 65212. (314)-882-8907

Wallace Duncan: Johnson #24; NIMH, Clinical PsychoBio. Branch. 5808 Winegrove CT, Derwood, MD 20855. (301)-496-9783

Jeffrey A. Elliott: Johnson #4; VA Med. Center, Research Serv. Y-151, Dept. of Phys., 3350 La Jolla Village Dr., San Diego, CA 92161. (619)-552-8585

Russell G. Foster: Burbank-East #22; Univ. of Virginia, Dept. of Bio., Gilmer Hall, Charlottesville, VA 22901. (804)-982-5491

Stephen J. Gaudet: Davis #1; Georgetown Univ., NEI, NIH, Dept. of Bio., Washington DC., 20057.

Bruce D. Goldman: Burbank-West #1; Univ. of Connecticut, U-154, Storrs, CT 06269. (203)-486-2934

Paul A. Hargrave: Burbank-West #22; Univ. of Florida, Dept. of Ophthalmology, Box J-284 JHMC, Gainesville, FL 32610. (904)-392-9098

Michael Hastings: Davis #4; Univ. of Cambridge, Dept. of Anatomy, Downing St., Cambridge CB2 3DY, England. 0223-333793

A.K. Ho: King #4; Univ. of Alberta, Faculty of Med., 7-26 Med. Sci. Bldg., Edmonton, Alberta T6G 2H7, Canada. (403)-492-7213

Chia-Tung Hsiao: Burbank-West #2; Univ. of Connecticut, Dept. of Phys. & NeuroBio., Box U-154, Bldg. 4, 3107 Horsebarn Hill R, Storrs, CT 06269-4154. (203)-486-2155

Jonathan Karp: Burbank-East #24; Vanderbilt Univ., Dept. of Phys., 111 21st Ave. South, Nashville, TN 37240. (615)-322-2485

David C. Klein: Gannett #7; NIH, NICHD, Bldg. 36, Rm. 4A07, 9000 Rockville Pike, Bethesda, MD 20892. (301)-496-6915

Diana N. Krause: Farm #3; Univ. of California College of Med., Dept. of Pharm., Irvine, CA 92717. (714)-856-6771

John Liu: Gannett #11; Eye Research Inst., Retina Foundation, 20 Staniford St., Boston, MA 02114. (617)-742-3140

Richard N. Lolly: Gannett #10; UCLA/VA, Lab Devo. Neurology, VA Med. Center 151 B9, Sepulveda, CA 91343. (818)-895-9443

Hilmar Meissl: Johnson #22; Max Planck Inst., Parkstrasse 1, D6350 Bad Nauheim, Germany. 06032-705272

Michael Menaker: Morton #23; Univ. of Virginia, Dept. of Bio., Charlottesville, VA 22901.

Armando Menedez-Pelaez: Burbank-West #23; Univ. of Oviedo, Spain, Dept. of Morphology & Cell Bio., 33006 Oviedo, Spain. 34-8-5103609

John R. Moffett: Davis #3; Georgetown Univ., Dept. of Bio., 37th & O St., NW, Washington, DC 20057. (202)-687-5976

Robert Y. Moore: Johnson #3; Univ. of Pittsburgh, BST W1657, Center for NeuroSci., Pittsburgh, PA 15261. (412)-648-8322

Peter J. Morgan: Davis #4; Rowett Research Inst., Greenburn Rd., Bucksburn, Aberdeen AB2 9SB, Scotland. 0224-712751

M.A.A. Nambodiri: Davis #1; Georgetown Univ., Dept. of Bio., Reiss Bldg., Washington, DC 20057. (202)-687-5997

Robert F. O'Dea: King #1; Univ. of Minnesota, Box 468 UMHC, 420 Delaware St., SE, Minneapolis, MN 55455. (612)-625-9651

Andreas Oksche: Gannett #6; Univ. of Giessen, Dept. of Anatomy & CytoBio., 123 Aulweg, W-6300 Germany. 641-702-3940

James Olcese: Gannett #5; Inst. for Hormone & Fertility Research, Grandweg 64, 2000 Hamburg 54, Germany. 49-40-5619-0826

Mary E. Pierce: King #3; Northwestern Univ., Dept. of NeuroBio., 2153 Sheridan Rd., Evanston, IL 60208. (708)-491-8303

Stacey J. Piszczkiewicz: Thoreau #1; Case Western Reserve Univ., Sch. of Med., NeuroSci., 2040 Adelbert Rd., Cleveland, OH 44106-4975. (216)-368-4616

J. Bradley Powers: Gannett #12; Vanderbilt Univ., Dept. of Phys., 111 21st Ave. South,
 Nashville, TN 37240. (615)-343-7554
 Ignacio Provencio: Burbank-East #21; Univ. of Virginia, Dept. of Bio., Gilmer Hall,
 Charlottesville, VA 22901. (804)-982-5491
 Russel J. Reiter: Infirmary #2; Univ. of Texas Health Sci. Center, Dept. of Cell Structural Bio.,
 7703 Floyd Curl Dr., San Antonio, TX 78284. (512)-567-3859
 Steven M. Reppert: Davis #21; Massachusetts General Hospital, Jackson 1226, Fruit St.,
 Boston, MA 02114. (617)-726-8450
 Mark Rollag: Davis #22; Uniformed Serv. Univ., Dept. of Anatomy, 4301 Jones Bridge Rd.,
 Bethesda, MD 20814-4799. (301)-295-3212
 Patrick Roseboom: Morton #2; NIH Bldg 36, Bethesda, MD 20892. (301)-496-6915
 Juan M. Saavedra: Davis #24; Natl. Inst. of Mental Health, 10/2045, 9000 Rockville Pike,
 Bethesda, MD 20892. (301)-496-0160
 Nicolas C. Schaad: Johnson #1; Natl. Inst. of Health, Bldg. 36, Rm. 4A07, NIH, Bethesda, MD
 20892. (301)-496-6914
 Alicia M. Seltzer: Thoreau #22; Natl. Inst. of Mental Health, 10/20-45, 9000 Rockville Pike,
 Bethesda, MD 20892. (301)-496-0160
 Valerie Simonneaux: Farm #1; Ura-Chrs 1332, Lab Zoologie, 12, Rue de L'Univ., 67000
 Strasbourg, France. 33-88-358508
 Judy Siuciak: Farm #2; Northwestern Univ., Dept. of Pharm. Searle 8-477, 303 E Chicago
 Ave., Chicago, IL 60611. (312)-503-1695
 Jorg Stehle: Burbank-East #3; Massachusetts General Hospital, Lab Devo. ChronoBio., Jackson
 1226, Boston, MA 02114. (617)-726-8450
 Stephen Steinlechner: Gannett #2; Philipps Univ., Dept. of Bio., Lahnberge, D3550 Marburg,
 Germany. 49-6421-283412
 Milton H. Stetson: Johnson #23; Univ. of Delaware, Life & Health Sci., 117 Wolf Hall, Newark,
 NJ 19716. (302)-451-6977
 Ariane Stieglitz: Thoreau #23; Philipps Univ., Dept. of Bio./Zoology, Lahnberge P.O. Box 1929,
 W-3550 Marburg, Germany. 49-6421-283424
 David A. Sugden: Johnson #21; King's College, Phys. Group, BioMed. Sci. Div., Campden Hill Rd.,
 Kensington, London W8 7AH, England. 071-836-5454
 Jason J. H. Sun: Gannett #3; Univ. of Texas Health Sci. Center, Dept. of Cellular & Structural
 Bio., 7703 Floyd Curl Dr., San Antonio, TX 78284-7762. (512)-567-3860
 Joseph S. Takahashi: Davis #23; Northwestern Univ., NeuroBio. & Phys., 2153 Sheridan Rd.,
 Evanston, IL 60208. (708)-491-4598
 Herbert Underwood: Johnson #4; North Carolina St. Univ., Dept. of Zoology, Raleigh, NC 27695.
 (919)-737-3838
 Jiri Vanecek: Johnson #1; N.I.H., NICHD, Bldg. 36, Rm. 4A07, 9000 Rockville Pike, Bethesda,
 MD 20892. (301)-496-6915
 Mohan Viswanathan: Davis #24; Natl. Inst. of Mental Health, 10/20-45, 9000 Rockville Pike,
 Bethesda, MD 20892. (301)-496-0160
 David R. Weaver: Davis #21; Massachusetts General Hospital, Lab Devo. ChronoBio., Jackson
 1226, Boston, MA 02114. (617)-726-8450
 Marcia G. Welsh: Thoreau #21; Univ. of South Carolina, Sch. of Med., Dept. of Anatomy, Cell Bio.
 & NeuroSci., Columbia, SC 29208. (803)-733-3374
 Lennart Wetterberg: Gannett #4; Karolinska Inst., 81 Stockholm S-112, Sweden.
 46-8-1305000
 Allan F. Wiechmann: Burbank-East #24; Bowman Gray Sch. of Med., Dept. of NeuroBio., 300
 South Hawthorne Rd., Winston-Salem, NC 27103. (919)-748-2940
 S.M. Yie: Gannett #1; McMaster Univ., Dept. of BioMed. Sci., 1200 Main St. W, Hamilton, Ont.
 L8N 3E5, Canada. (416)-525-9140
 Timothy G. Youngstrom: Burbank-East #2; Georgia St. Univ., Phys., Univ. Plaza, Atlanta, GA
 30303. (404)-651-2283
 Hing-Sing Yu: Burbank-East #23; Univ. of Texas, Div. of Life Sci., San Antonio, TX
 78249-0662. (512)-691-4456

Arthur Yuwiler: Burbank-East #21; USVA/UCLA, NeuroBioChem. Lab T-65, VAMC Brenstwood
Div. - Wilshire & Sawtelle, Los Angeles, CA 90075. (213)-824-6788
Martin Zatz: Infirmary N. Apt.; Natl. Inst. of Health, Bldg. 36, Rm. 2A-17, LCB, NIMH,
Bethesda, MD 20892. (301)-496-5590
Richard E. Zigmond: Burbank-East #3; Case Western Reserve Univ., Dept. of NeuroSci.,
Cleveland, OH 44106. (216)-368-4614

FINANCIAL STATUS REPORT

(Follow instructions on the back)

1. RECIPIENT ORGANIZATION (Name and complete address, including ZIP code)
Gordon Research Conferences
Gordon Research Center - Univ of RI
Kingston, RI 02881-0801

1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED		2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER		OMB Approved No. 80-RO180		PAGE OF	
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05 0300 482				☒ YES ☐ NO		☒ CASH ☐ ACCRUAL	
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STATUS OF FUNDS		(a)	(b)	(c)	(d)	(e)	(f)	TOTAL (g)
PROGRAMS/FUNCTIONS/ACTIVITIES ▶								
a. Net outlays previously reported	\$ 0.00	\$	\$	\$	\$	\$	\$	\$
b. Total outlays this report period	53,110.00							
c. Less: Program income credits	0.00							
d. Net outlays this report period (Line b minus line c)	53,110.00							
e. Net outlays to date (Line a plus line d)	53,110.00							
f. Less: Non-Federal share of outlays	47,110.00							
g. Total Federal share of outlays (Line e minus line f)	6,000.00							
h. Total unliquidated obligations	0.00							
i. Less: Non-Federal share of unliquidated obligations shown on line h	0.00							
j. Federal share of unliquidated obligations	0.00							
k. Total Federal share of outlays and unliquidated obligations	6,000.00							
l. Total cumulative amount of Federal funds authorized	6,000.00							
m. Unobligated balance of Federal funds	0.00							

9. TYPE OF RATE (Place "x" in appropriate box)		13. CERTIFICATION	
☐ PROVISIONAL	☐ PREDETERMINED	I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.	
☐ BASE	☐ FEDERAL SHARE	SIGNATURE OF AUTHORIZED REPRESENTATIVE	
4. TOTAL AMOUNT		TYPED OR PRINTED NAME AND TITLE	
		Alexander N. Cruickshank	
		Director	
		DATE REPORT SUBMITTED	
		3/19/93	
		TELEPHONE (Area code, number and extension)	
		401-783-4011	

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Draft: 7 October 1991

1991 GORDON CONFERENCE ON CHRONOBIOLOGY

FINAL REPORT

Air Force Office of Scientific Research
Grant Number AFOSR-91-0280

J. Woodland Hastings
Chairman, Conference on Chronobiology

The 1991 Gordon Conference on Chronobiology was held at the Swabian Conference Center in Irsee, Germany, from September 29 to October 4, 1991. The possibility of holding the conference in Europe was known at the previous (1989) meeting, and conferees voted to do so if the opportunity materialized.

Such a move was particularly appropriate in the field of Chronobiology; research activity in this area is strong in Europe, particularly in Germany, the UK, Netherlands and Switzerland.

The conference was at first considerably oversubscribed, but additional accommodations obtained a few weeks prior to the conference permitted 140 participants to attend (Appendix A). Of these, 65 were from the USA, Canada and Mexico, 30 from Germany, 9 each from the Netherlands and the UK, and the remaining 20 from 10 other countries. Some 38 of the attendees were women; 11 of these were on the program. (In the end, fewer than 10 applicants could not be accommodated)

Probably more than most, the field of chronobiology embraces many subdisciplines, ranging from molecular biology and genetics to physiology and ecology. It is also diverse in terms of biological material, including all Kingdoms and spanning the phylogenetic spectrum. It is relevant to many specific missions, such as medicine and pharmacology, agriculture and insect control, as well as marine biology and oceanography.

How can such a diversity of subjects and scientists be united to address the true frontiers of a subject? In my opinion, it can be attributed to the fact that the biological clock is pervasive both in terms of organisms and functional processes, and that it is of functional importance in very different fields and problems. Yet its fundamental mechanism, even in the most general terms, remains unknown. Thus, researchers find themselves united in the search for the mechanism, a very dynamic activity that respects no conventional borders.

The program (Appendix B) thus reflects the wish and the willingness of workers in this area to consider a diversity of functions and a diversity of systems, ranging from nitrogen fixation in bacteria, photosynthesis and luminescence in marine dinoflagellates and CAB gene expression in wheat, to conidiation in *Neurospora*, eclosion in *Drosophila*, and activity in rodents and man.

MAR 19 1993 02:00PM GORDON RES. CONF. S.

The first day focussed on clock genes and clock regulation of gene expression at both transcriptional and translational levels. Evidence was presented that the product of the period gene in *Drosophila* can regulate the expression of that gene, the first direct evidence for such a loop. Circadian control of transcription in *Neurospora* was described, and the involvement of the phytochrome system in this step was shown for higher plants.

The second day was concerned first with non photic effects on the clock, exploring avenues related to the recent discovery that the circadian clock can be reset by physical activity. A second session was concerned with non circadian oscillations, especially with higher frequency rhythms and how they might serve as models for the circadian clock.

The third day was concerned with vertebrate rhythms, with emphasis on the role of the suprachiasmatic nuclei in the brain, whose lesion or removal results in the loss of rhythmicity. Several new discoveries in this area were reported.

Day four dealt first with studies of human clocks, an area that has received considerable attention in recent years. Interested as we all are in sleep (and jet lag), this area of study involves both basic and applied aspects. In the latter category, for example, is the role of the clock in seasonal affective disorder (SAD). A second session dealt with photoperiodism in both plants and animals; this also has both basic and applied aspects, the latter related to the control of reproduction. The postulate that it necessarily involves the circadian clock came into question. Heresy!

The final session dealt mostly with endogenous rhythms having tidal, lunar or annual periods. Little is known as yet as to how these are generated in the organism, but it seems clear that it is endogenous, since they will continue in the absence of the particular environmental cycle.

Poster sessions were organized by the Vice-chair of the conference. About 90 were contributed (Appendix C). These were organized into three sessions, held on Monday, Wednesday and Thursday afternoons. They constituted an unusually valuable component of the conference and allowed participants to get both an overview and detailed information concerning many different research programs.

The attendees expressed approval of the fact that the conference was held in Germany. This, it was felt, provided recognition of the reality that science and research is truly international in character, and that important ideas and experimental advances are not related to national boundaries. With 16 countries represented, the conference was indeed international in character.

In spite of the magnificent ambiance and facilities provided by the conference center, the attendees voted unanimously to return two years hence to the more pristine accommodations provided by the summer Gordon conferences in the USA. The very argument that led the participants to vote to hold this conference in Germany compelled them to rotate back to the US in 1993. But they also made the explicit request that the 1995 conference return to Europe.