CURRICULUM VITAE

ROSEMARY JAGUS, Ph.D.

PERSONAL DATA:

Place of Birth:	Swanwick, Derbyshire, England
Citizenship:	United Kingdom
Visa status :	Permanent Resident

OFFICE ADDRESS:

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LMRCSC web page: http://www.umces.edu/imet/lmrcsc

Current Professional Interests

- Translational control of eukaryotic gene expression, zebrafish, dinoflagellates
- Diversity of eukaryotic translation machinery
- Use of zebrafish as model system for innate response to disease
- Development and use of *in vitro* translation systems

EDUCATION:

1971, B.Sc.: University College of North Wales, Bangor, U.K., Zoology (summa cum laude)
1976, Ph.D.: University College, London, U.K., Biochemistry

POSTDOCTORAL TRAINING:

1974-1977: MRC Fellow, Department of Biochemistry, University of Sussex, U.K. (supervisor, Dr. John E. Kay)
1977-1980: Visiting Fellow, Laboratory of Molecular Hematology, NHLBI, NIH (supervisor, Dr. Brian Safer)

AWARDS AND FELLOWSHIPS

1971-1974: Bursarship (training scholarship), Imperial Cancer Research Fund, U.K.
1974-1977: British Medical Research Council Postdoctoral Fellowship
1977-1980: Fogarty International Fellowship
2005: University System of Maryland Regents Award for collaboration in teaching, with Dr. Eric May (UMES)

ACADEMIC APPOINTMENTS:

1971-1974: Graduate student, Imperial Cancer Research Fund, England
1974-1977 Postdoctoral Fellow, Department of Biochemistry, School of Biological Sciences, University of Sussex, Sussex, U.K.

1977-1980	Visiting Fellow, Laboratory of Molecular Hematology, NHLBI, NIH 1980-1982:Visiting Scientist, Laboratory of Molecular Hematology, NHLBI, NIH (Lab Chief, Dr. W. French Anderson)
1981 (April/May):	Guest Scientist, Friedrich Miescher Institute, Basel, Switzerland
1982-1983:	Visiting Scientist, Laboratory of Molecular, Cellular & Developmental Biology, NIDDK, NIH (Lab Chief, Dr. Robert T. Simpson)
1983-1990:	Assistant Professor, Department of Biochemistry, University of Pittsburgh, Pittsburgh, PA
1989 (Sept/Oct):	Visiting Assistant Professor, University of Washington Primate Center, Seattle, WA
1990-present:	Associate Professor, Center of Marine Biotechnology, UMBI, Baltimore, MD, now UMCES-IMET.
1991 (July/Aug)	Visiting Scientist, Laboratory of Molecular, Cellular & Developmental Biology, NIDDK, NIH
1995-2000:	Member, Oncology Program, Greenbaum Cancer Center, UMB, Baltimore, MD
2000 (Feb/March)	Visiting Professor, Department of Cell Research and Immunology, University of Tel Aviv, Israel
2002 (March-June)	Visiting Professor, Center for Reproductive Biology, Albert Einstein College of Medicine, Bronx, NY
2002-present:	Project Director, LMRCSC-COMB/IMET (http://www.umces.edu/imet/lmrcsc)
2002-present:	Director of COMB/IMET LMRCSC-supported minority summer internship program, Living Marine Summer
2010-2011:	Acting Vice President for Academic Affairs, UMBI

EXPERIENCE OTHER THAN ACADEMIC APPOINTMENTS:

1991-98: consultant on *in vitro* translation systems, Promega Corporation. $1,487,274, total direct costs.

Spring, 1992: patent disclosure on "Recombinant vaccinia virus K3L gene product for enhancement of cell-free translation systems". Patent filed March 1993. License held by Promega Corporation in 1993/94.

1996/1997: special consultant and expert witness for Promega Corporation in patent violation suit filed against Novagen in reference to coupled transcription/translation systems.

July 2000: consultant on *in vitro* translation systems, Promega Corporation.

August 2003: confidentiality agreement with Biomimetics, Inc. to test efficacy of IPNV vaccine.

August 2004: confidentiality agreement with Advanced Product Enterprises on improving efficiency of cell-free translation systems.

RESEARCH SUPPORT:

Current Support

NIH/NSF: R01ES021949-01/NSF OCE1313888, Oceans & Human Health: Translational regulation in toxic dinoflagellates, 09/01/12-11/30/17, $1,985,627 total, PI, Place, A. R., co-PI.

NA11SEC4810002
Living Marine Resources Cooperative Science Center (MSI training grant)
Consortium with University of Maryland Eastern Shore, Delaware State University, Hampton University, Savannah State University & Rosenstiel School of Business, University of Miami. 09/01/11-08/31/16. Current year IMET core budget, $402,647 (includes $286,055 core and $116,600 for research projects), (**UMCES-IMET co-PI**; Director and overall project PI, Paulinus Chigbu, UMES).

LMRCSC TAB: sub to NA11SEC4810002, Hanif, A. PI, **Jagus, R.** & Place, A.R., Stevens, B.G. co-PIs, Ontogenic changes in the diet and microbiome of Atlantic menhaden using DNA barcoding. 09/01/15-12/31/16, $46,003, total costs.

Previous Support

Jagus, R. Maryland SeaGrant Fellowship for Ammar Hanif, 06/01/13-05/31/15, “Diet and feeding of menhaden using barcoding identification based on cox1 sequences to enable the linking of primary productivity to fisheries”, $60,000.

LMRCSC TAB: sub to NA11SEC4810002, Hanif, A. PI, **Jagus, R.** & Place, A.R., co-PIs, Diet and feeding of menhaden using DNA bar-coding, 09/01/14-12/31/15, $43,628, total costs.

MDSG: Schott, S., **Jagus, R**. & Johnson, E. Monitoring for outbreaks of a fatal blue crab virus in rivers with soft shell production systems, 02/01/12-01/31/14, co-PI, $126,511.

NOAA/EPP: NA11SEC4810002, Living Marine Resources Cooperative Science Center (MSI training grant), Consortium with University of Maryland Eastern Shore, Delaware State University, Hampton University, Savannah State University & Rosenstiel School Marine & Atmospheric Sciences, University of Miami. 09/01/06-08/31/11. Total costs, $1,421,600, core.

LMRCSC-TAB: Ebanks, D., Benetti, D., Erhardt, N. (RSMAS), **Jagus, R.** (UMCES-IMET) Influence of predicted aqueous hypercapnia on cobia, *Rachycentron canadum*, pre-fertilization and larval stages of development. 01/05/13-12/31/13, $41,600 ($15,569 to RJ)

LMRCSC-TAB: Tulu, A., Ishaque, A. (UMES), **Jagus, R.** Development of molecular tools and methodologies to evaluate the effects of marine pollutants in the Atlantic tomcod, *Microgadus tomcod*, 01/05/12-12/31/12 ($13,590 to RJ).

LMRCSC-TAB: Tulu, A., Ishaque, A. (UMES), **Jagus, R.** Development of molecular tools and methodologies to evaluate the effects of marine pollutants in the Atlantic tomcod, *Microgadus tomcod*, 01/05/11-12/31/11 ($20,942 to RJ).

NSF: MCB-0634013
Role of PKR and PKZ in zebrafish
06/15/07-05/31/11. Total costs, $439,719
(Principal Investigator)

NOAA/EPP: NA06OAR4810163
Living Marine Resources Cooperative Science Center (MSI training grant)

Consortium with University of Maryland Eastern Shore, Delaware State University, Hampton University, Savannah State University & Rosenstiel School of Business, University of Miami.
09/01/06-08/31/11. Total costs, $12,500,000. Final year IMET budget, $343,076 (includes $246,108 core and $96,968 supplemental for research projects), (COMB/IMET PI; Director and overall project PI, Paulinus Chigbu, UMES).

NOAA/EPP: NA06OAR4810163
Living Marine Resources Cooperative Science Center (MSI training grant)
Consortium with University of Maryland Eastern Shore, Delaware State University, Hampton University, Savannah State University & Rosenstiel
10/01/01-09/30/06. Total costs, $12,500,000. COMB budget varied each year from $280-$380,000 (COMB PI; Director and overall project PI, Joseph Okoh, UMES).

LMRCSC: Ebanks, D., Benetti, D., Erhardt, N. (RSMAS), **Jagus, R.** (UMBI-COMB)
Influence of predicted aqueous hypercapnia on cobia, *Rachycentron canadum*, pre-fertilization and larval stages of development. 12/01/11-11/31/12, $35,000 ($5,569 to RJ)

LMRCSC: Essential fatty acid composition and immune competence of Chesapeake Bay striped bass, *Morone saxatalis*
12/01/08-12/31/09, $45,043 ($9,569 to RJ)
co-PI: Lonnie Gonsalvez (UMES), PI.

LMRCSC: Evaluation of adaptation to stress conditions in cobia larvae and early juveniles cultured with and without the use of probiotics.
12/01/07-11/31/08, $28,000 ($9,569 to RJ)
co-PI; Refik Orhun (Rosenthiel School of Marine and Atmospheric Science, University of Miami, PI.

LMRCSC: Development of strain- and species– specific probes to investigate reservoirs and genetic diversity of the Blue Crab parasite, *Hematodinium* sp.
12/01/07-11/31/08, $59,698 ($28,041 to COMB)
co-PI; Eric Schott, PI; Joe Pitula (University of Maryland Eastern Shore)/ Dennis MacIntosh (Delaware State University), co-PIs.

NSF: MCB-0134013
Role of eIF4E family members in zebrafish
02/01/02-01/31/07. Total costs, $526,732
(Principal Investigator)

NSF: BES-0224717, Metabolic Engineering
Deployment of Novel Enhanced Stress Responses to Improve Recombinant Expression Systems
10/01/02-09/30/06, total costs, $539,393
(co-PI, with Frank Robb, COMB, as PI and Doug Clark, UC Berkeley, as co-PI)

LMRCSC: Evaluation of adaptation to stress conditions in cobia larvae and early juveniles cultured with and without the use of probiotics.
10/01/06-09/30/07, $48,000 ($18,569 to RJ)

co-PI; Refik Orhun (Rosenthiel School of Marine and Atmospheric Science, University of Miami, PI.

LMRCSC: Development of strain- and species– specific probes to investigate reservoirs and genetic diversity of the Blue Crab parasite, *Hematodinium* sp.
10/01/06-09/30/07, $59,698 ($28,041 to RJ)
co-PI; Eric Schott, PI; Joe Pitula (University of Maryland Eastern Shore)/Dennis MacIntosh (Delaware State University), co-PIs.

LMRCSC: *Hematodinium perezei:* development of detection assays, prevalence, and effect on crab species structure,
10/01/05-09/30/06, $66,466 ($28,203 to RJ)
Principal Investigator with Al Place (COMB)/Joe Pitula (University of Maryland Eastern Shore)/Dionne Hoskins(Savannah State University), co-PIs.

LMRCSC: *Hematodinium perezei:* development of detection assays, prevalence, and effect on crab species structure,
10/01/04-09/30/05, $64,484 ($24,988 to COMB)
Principal Investigator with Al Place (COMB)/Joe Pitula (University of Maryland Eastern Shore)/Dionne Hoskins(Savannah State University), co-PIs.

NSF: MCB-9808401
Functional characterization of a novel homologue of eIF4E
9/1/98-12/31/02. Total costs, $337,000
(Principal Investigator)

MAES: IPNV and eIF2α phosphorylation
7/1/98-6/30/01. Direct costs per year, $25,000 (graduate student support for Joe Garner)

NIH: 1-RO1 CA67382
Molecular events in the pathogenesis of Kaposi's sarcoma
4/1/95-3/31/00. Direct costs per year, $153,000
(co-PI, with PI Dr. Margaret K. Offerman)

Lucille P. Markey Charitable Trust:
95-31: Program grant to COMB/CARB
1/15/95-6/30/98, direct costs to RJ, $51,000 per year
Project C: Use of eIF4E in development of marine invertebrate cell lines

NSF: MCB 93-17264
Structure/Function studies of PKR using vaccinia virus pK3
5/1/94-4/30/98 Total costs, $240,000
(Principal investigator)

US Army: DAMD17-94-4324
Role of PKR in the proliferation of breast carcinoma cells
7/1/94-6/30/96 Total costs, $150,000
(Principal investigator, co-PI, Dr. Angela Brodie)

SeaGrant: Development of RIAs for striped bass gonadotrophins
9/1/94-8/31/96 Total costs, $187,205
(co-PI with PI Dr. Yonathan Zohar)

NSF: MCB 91-05451
Regulation of eIF-2 by vaccinia virus
8/30/91-1/31/94 Total costs, $215,000
(Principal Investigator)

NIH: 2R01 GM33631
Translational control of gene expression in developing sea urchin
7/1/87-6/30/92 Total direct costs, $460,339.
(Principal Investigator)

HRSF: Vaccinia virus encoded initiation factor.
11/1/89-10/31/90 Total direct costs, $22,000.
(Principal Investigator)

NIH: 1R01 GM33905
Control of eIF-2 activity in regulation of translation.
7/1/84-6/30/89 Total direct costs, $200,797. (Principal Investigator)

HRSF: Translational control of gene expression in developing sea urchin
1/1/84-12/31/84 Total direct costs, $13,800
(Principal Investigator)

NIH: 1R01 GM33631
Translational control of gene expression in developing sea urchin
11/1/83-6/30/87 Total direct costs, $219,586.
(Principal Investigator)

TEACHING ACTIVITIES

1984-1990: Biochemistry 241: Biochemical Techniques (lectures on restriction enzymes, DNA mapping, in vitro translation, production and use of antibodies, tissue culture) 4 credits.

1986-1990: Microbiology 250: Molecular Genetics I (lectures in protein synthesis) (4 credits).

1984-1990: Microbiology 315: Molecular Genetics II (lectures in translational control of gene expression, molecular developmental biology) (4 credits).

1989-1990: Biochemistry 341: Course Director, Signal Transduction (3 credits).

1983-1990: Medical School Biochemistry: Clinical Correlation Conferences.

1984-1986: Medical School Biochemistry: Medical Fellows Laboratory (practical course in recombinant DNA techniques).

1991-1993: MEES 809N, fall and spring semesters: Seminar course in Marine Molecular Biology (1 credit).

1993-1999: MMIC 704, Principals of Virology (lectures on adeno and pox viruses)

1996-2006: MCB 602, Fundamentals of Cell Biology (lectures on eukaryotic protein synthesis).

2008: MEES 608, Fish Immunology (jointly with Dr. Andrea Johnson, UMES)

2008-present: MEES 606, Cell and Molecular Biology for Environmental Biologists (jointly with Dr. Allen Place), formerly MEES 685C.

GRADUATE FACULTY MEMBERSHIP

1983-1990: graduate faculty, Biochemistry Department, University of Pittsburgh School of Medicine

1992-present: graduate faculty, Marine, Estuarine and Environmental Studies Program, University of Maryland College Park

1994-2005: graduate faculty, Molecular and Cellular Biology Program, University of Maryland, Baltimore

2006-present: graduate faculty, GPILS, University of Maryland, Baltimore

Fall 2010–present: Co-Chair of MEES graduate program Environmental Molecular Biology/Biotechnology AOC

2012-present: special graduate faculty, UMES

TRAINEES

GED Students

James Holland, 1992. Currently, retired.

Masters Students

Giridhar Akkaraju: "Sea urchin eIF-2B is regulated by developmental regulation of redox potential". University of Pittsburgh, 1990.

Gwo-Jiunn Hwang: "Regulation of glutaminase and phosphoenol pyruvate carboxykinase gene expression". University of Pittsburgh, 1991. Gwo-Jiunn transferred into my laboratory and completed his studies under my direction.

Jon Eric Witzel: (high school teacher). "Workshop in recombinant DNA for high school teachers". Hood College, 1991. Currently, Dean of Upper School Science, Severn School, Severna park, MD. Received Fullbright scholarship in 1994 to teach for one year exchange in U.K.

Eduardo Lopes: "Use of translation initiation eIF4E as a marker for growth in cultured marine invertebrate cells" (co-adviser with Dr. Leonor Cancela) University of Algarve, Portugal, 2001. Currently technical associate with BioRad, Portugal.

Javier Robalino: "Two zebrafish eIF4E family members are functionally divergent and differentially expressed", 2001. Ph.D. Department of Biochemistry, Medical University of South Carolina, 2006. Currently, postdoctoral scientist NIH, Bethesda, MD.

Lara Nagle: "Analysis of Infectivity of *Hematodinium perezi* in Blue Crabs (*Callinectes sapidus*)" UMES, 2004.

Donald Bacoat: "eIF2 phosphorylation as a marker for probiotic efficacy in cobia", co-mentored with Daniel Benetti, RSMAS, University of Miami (did not complete program). Currently Ph.D. candidate Brown University, Rhode Island.

Ammar Hanif: “Evidence of Environmental *Hematodinium* sp., a parasite of the blue crab, *Callinectes sapidus,* in the coastal bays of Delaware and Maryland”, MEES, UMCP, 2012. (co-mentor with Dr. Eric Schott).

Ph.D. Students

Wun-Ing Huang: "Translational control in unfertilized sea urchin eggs". University of Pittsburgh, 1988. Postdoctoral fellow with Dr. John Wolford, Department of Biological

Sciences, Carnegie Mellow University, 1988-1990. Currently working in the Department of Environmental and Chemical Analysis, Environmental Protection Agency, Baton Rouge, L.A.

Jean Kim: M.D./Ph.D. "Regulation of protein kinase C". Graduated with M.D. and Ph.D. in May 1990. Currently working at Johns Hopkins University Hospital.

Joseph Garner, Ph.D.: "The role of PKR and eIF2alpha phosphorylation in defense against infection by IPNV", Molecular and Cellular Biology Program, University of Maryland, Baltimore, 2002. After working as a Research Associate, Biological Mimetics Inc., Frederick, MD, established his own company, Advanced Product Enterprises, as COO & CFO.

Eric Landis, Ph.D. " Characterization and transcriptional analysis of rainbow trout MHC class I pathway genes in response to viral infection", co-mentored with Dr. John Hansen, Molecular and Cellular Biology Program, University of Maryland, Baltimore, 2006. Currently, Staff Scientist, Biological Resources Division USGS, Seattle, Washington.

Adam Tulu, Ph.D. (co-mentor with Dr. Ali Ishaque, UMES). Evaluation of the separate and joint effects of polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCB) contaminants on *Microgradus tomcod* ovarian cytochrome 19A (CYP19A) and CYP-1A, MEES, UMES, 2011.

Lonnie Gonsalves, Ph.D.: " Essential fatty acid composition and immune-competence of Chesapeake Bay Striped Bass *Morone saxatilis*, MEES, UMES 2012 (co-mentor with Dr. Eric May, UMES)

Kate Gillespie: “eIF4E family members in zebrafish”, Ph.D. May 2015.

Chieh-Lun (Jarren) Liu: "Changes in eIF2α phosphorylation in zebrafish and cobia with diet and probiotics" Ph.D. April 2015 (co-mentor with Dr. Allen Place).

Dwight Ebanks: “Influence of aqueous hypercapnia on cobia, *Rachycentron canadum*, pre-fertilization and larval stages of development” Ph.D. 2014, University of Miami (co-mentor with Dr. Daniel Benetti, RSMAS, University of Miami)

Grant Jones: Regulation of eIF4Es in the toxic dinoflagellate, *Karlodinium veneficum*, Ph.D. April 2016, GPILS, University of Maryland, Baltimore.

Postdoctoral

Linnea J. Hansen: American Cancer Society postdoctoral fellow, January 1985 - June 1988. Left to work with Dr. Arthur Pardee in the Department of Cellular Proliferation, Harvard University School of Medicine. Currently working in the Division of Toxicology in Health Effects, Environmental Protection Agency, San Francisco, CA.

Deborah Crouch: 1986-1987. Became senior staff scientist at Braton Biotech, Inc., Rockville. Currently patent examiner in U.S. Patent and Trademark Office.

Kathleen Carroll: 1991-1992. Became a staff fellow in Laboratory of Simple Eukaryotes, NIADDK, NIH with Dr. Reed Wickner and later trained as a patent examiner in the Biotechnology branch of the U.S. Patent and Trademark Office. Currently Dr. Carroll functions as technology liaison in the Technology Transfer Branch for the Dermatology Branch, HIV/AIDS Malignancy Branch, Medicine Branch and Metabolism Branch of the Division of Clinical Sciences.

Brian D. Stern: 1991-1993. Currently operating his own business in Austin, Texas, designing interactive software for biomedical instrumentation.

Tyson Sharp: 1995-1998. Currently, Senior Lecturer, Centre for Molecular Oncology, Barts Cancer Institute, Queen Mary, University of London, U.K.

Francis Moonan: 1995-1996. Currently, patent officer in U.S. Patent and Trademark Office.

Scott C. Fahrenkrug: 1996-1997: Currently, CEO and Chairman of the Board at Recombinetics, Inc. (livestock genetics for biomedical and agricultural applications), adjunct Professor at University of Minnesota, co-founder and Board Member at Miinome, Inc..

Bhavesh Joshi: 1996-2006. Currently Chief Scientific Officer, Advanced Product Enterprises, Frederick, MD.

Wolf Pecher: 2007-2008, currently Assistant Professor in Biological Sciences, University of Baltimore.

Kristie Lidie: 2007-2009 (with Allen R. Place), currently postdoctoral fellow, NCI, NIH, Frederick, MD.

Eunseok Choi: 2009-2011, currently postdoctoral fellow in S. Korea.

Tsetso Bachvaroff: 2012-2013 (with Allen R. Place). Currently Research Assistant Professor, UMCES-IMET.

Educational activities to increase diversity: Program Director/UMCES-IMET PI in NOAA-EPP-funded partnership with UMES, Delaware State, Hampton, Savannah State Universities and University of Miami, RSMAS, Oregon State University http://www.umces.edu/imet/lmrcsc. In the last fifteen years this program has funded >150 minority undergraduate internships at COMB/IMET, has graduated 5 minority master's students, 4 minority Ph.D. students and currently supports 4 minority Ph.D. students, as well as co-mentoring students from partner institutions. Participating in joint research projects with LMRCSC partners resulting in enrichment experiences for partner HBI faculty members. Director of IMET's LMRCSC minority summer internship program (from 10-15 participants per year for the last 15 years). Mentor in Baltimore Polytechnic's Ingenuity Program and Howard County's Gifted & Talented Program for high school students; mentor in the NSF-funded program for area high school teachers.

PROFESSIONAL ORGANIZATIONS

Association of the American Society of Biological Chemists and Molecular Biologists
American Association for the Advancement of Science
American Association of University Women
International Society of Developmental and Comparative Immunology
NIH Alumni Association
PanAmerican Marine Biotechnology Association
World Aquaculture Society

PROFESSIONAL ACTIVITIES

Ad hoc referee for Am. J. Physiol.; Anal. Biochem., Biochemistry; Biotechniques; Biochem. J.; Biochem. Biophys. Acta; Biotechnology & Bioengineering; Cell Regulation; Development; Developmental and Comparative Immunology; Development, Genes & Evolution; Developmental Biology; Diseases of Aquatic Organisms; ELife; EMBO J.; Eur. J. Biochem.; FEBS J.; FASEB J.; Fish, Shellfish Immunol.; Gen. Comp. Endocrinol.; Histochem. J.; Int. J. Biochem. and Cell Biol.; J. Biol. Chem., J. Cell. Biochem.; J. Cell Sci.; J. Gen. Virol.; J. Virol., Mol. Cell; Mol. Cell. Biol.; Mol. Mar. Biol. & Biotechnol.; Nucleic

Acids Research; Oncogene; PlosOne; PNAS; RNA; Virology; Virus Research; Zool. Studies.

1986-present: Ad hoc reviewer, Developmental Biology Program, NSF.
1989-1990: special reviewer, Hematology II Study Section, NIH.
1992/93: special reviewer, Cardiovascular Study Section, NIH.
1993: panel member, US Agency for International Development.
1991-1998: consultant in cell-free translation systems to Promega Corporation.
1994 -1998: panel member, NSF study panel member for Molecular Biochemistry, Division of Molecular and Cellular Biosciences.
1994: co-organizer (with Dr. Jim Jefferson) of a satellite meeting to the Cold Spring Harbor Meeting on Translational Control entitled "Regulation of Eukaryotic Initiation Factor Activity", Hershey Medical Center, Hershey, PA.
1996-1999: panel member, Molecular Biology Study Panel, Section 4, Department of the Army, Breast Cancer Research program.
June 1999: session chair: 1999 Translation-U.K. Meeting, Dundee, U.K.
1999/2000: *ad hoc* member of NIH study section, Physiological Chemistry.
2000-2004: member of NIH study section, Physiological Chemistry.
2000: panel member, NSF study panel member for Molecular Biochemistry, Division of Molecular and Cellular Biosciences.
2001: panel member, grant review panel for Massachusetts Breast Cancer Research Program.
2003: member NIH Program Project cardiovascular study section.
2004: grant review panel member (U.S.), BARD aquaculture initiative.
2004-present: *ad hoc* member of NIH study section, Innovative Virology.
2007-present: reviewer for FDA Office of Women's Health
2007-2010: member, NSF study panel for Biochemistry of Gene Expression
2007: member, external review committee for FDA Center for Biologics Evaluation & Research, Division of Emerging Transfusion Transmitted Diseases
2007: Chair, Maryland review panel (U.S.), MD-BARD aquaculture/biotechnology initiative.
2009: *ad hoc* member, NIH study section Genes, Genomes & Genetics, J-sub-section.
2009: reviewer, Alberta Ingenuity Awards.
2009: *ad hoc* member, NIH study section Molecular Genetics, Section C
2010: *ad hoc* member, NIH study section Molecular Genetics, Section C
2011: *ad hoc* member, NIH study section Molecular Genetics, Section C
2011, 2012: member, NSF MCB Gene Expression Study Panel

UNIVERSITY AND COMMUNITY SERVICE

University

January, 1991-95: organizer of COMB seminar program.
April, 1991: representative of National Association of Marine Laboratories with a lobbying group supporting the Department of Energy's Biosciences Program.
1991/92: program organizer, University of Maryland's Women's Forum Annual Conference.
1991-1997: member, junior faculty search committee, COMB.
1992-present: member, aquaculture committee, COMB.

1992-1995: member, curriculum committee to develop marine molecular biology track for MEES program.
March/April, 1992: member, search committee for assistant director, COMB.
June, 1992: COMB representative to Ocean Sciences 2000 Workshop, resulting in "Ocean Resources 2000: A National Plan for Growth", Sea Technology, September, 1992, 10-23.
1992-1995: COMB representative and vice chair, UMBI senate.
1993: Program organizer, USM Faculty Roles and Rewards Conference.
1993-1996: Chair, COMB Institutional Animal Care and Use Committee.
1993/1994: Chair, COMB Promotion and Tenure Committee.
1993/1994: member, CAB Promotion and Tenure Committee
1994-2000: UMBI representative to CUSF
1994/95: member, MBC Promotion and Tenure Committee
1995: member, evaluation committee for COMB IACUC veterinarian
1995: member, faculty search committee (eukaryotic)
1995: member COMB Facilities Manager search committee
1995: member, UMBI Vice President for Academic Affairs search committee
1995: UMBI representative to the USM Chairpersons' Workshop
1995/96: Acting chair, UMBI Senate
1996-1999: Chair UMBI Senate
1996-1999: Safety Officer, COMB
1996-1999: member, Greenebaum Cancer Center (UMCC) Research Awards Committee
1996/97: member, faculty search committee (fish/shellfish transgenesis)
1997/98: member, search committee for Assistant Director of Maryland SeaGrant
1997/98: member, COMB Promotion and Tenure Committee
1998/99: member, IHV Promotion and Tenure Committee
1996-2000: member, UMBI Management Committee
1999: Chair, search committee for COMB Assistant Director
1999: member, search committee for UMBI President
1999: member, UMBI Strategic Planning Council
1999-2003: member, MCB examinations committee
1999-2010: member, Institutional Biosafety Committee, COMB
2000: Chair, faculty search committee (natural products)
2000: member, faculty search committee (fish immunology)
2000: member, search committee for UMBI's Vice President for Administration & Finance
2000: member, search committee for COMB Assistant Director
2000-2003: member, Molecular Cell Biology Graduate Program symposium program committee
2001/02: member, CAB APT committee
2001: Chair, faculty search (bioinformatics)
2001-present: COMB Director, Living Marine Resources Cooperative Science Center
2001-present: COMB member, Executive Committee, Living Marine Resources Cooperative Science Center
2001-2010: UMBI representative to CUSF
2001-2002: member, Molecular Cell Biology Graduate Program steering committee
2002-present: member, Curriculum Committee, Living Marine Resources Cooperative

Science Center
2002/03: Chair, COMB APT Committee
2003: member, search committee for UMBI's Research Compliance Coordinator
2003/04: Chair, COMB APT Committee
2004: member, search committee (fish immunology)
2004/05: member, UMBI Strategic Planning Committee
2005-2007: Chair, COMB Animal Policy Committee,
2005-2009: member UMBI IACUC
2006-2009: COMB graduate scholarship committee
2005/06: member, CBR P&T Committee
2005-2010: UMBI representative to CUSF
2006-2010: member, CUSF Recognition Committee (recommend Regents Awards winners to BOR, organizes Student Day in Annapolis & selects student presentations for same)
2006: Chair, Search Committee for COMB Assistant Director
2007/8: chair, COMB APT Committee
2007: member, COMB APT policy committee
2007/8: member, hiring process taskforce
2007-2010: member UMBI Senate
2008-2010: vice-Chair UMBI Senate
2008: Chair, search committee for COMB Assistant Director
2008: Chair, US chair of BARD-Maryland grant review committee
2008: facilitator, Eastern Shore Restoration and Education Program
2008: facilitator, UMES Upward Bound Program
2009: Chair, search committee for NTT Assistant Professor in aquaculture
2009/10: Acting VPAA, UMBI
2010-present: IMET representative to UMCES Senate
2010-present: Co-Chair of MEES graduate program Environmental Molecular Biology/Biotechnology AOC
2011-present: Vice chair UMCES Senate
2012-2013: Acting chair, UMCES Senate
2011-present: UMCES representative to CUSF
2011-13: member, CUSF Recognition Committee (recommend Regents Awards winners to BOR)
2011-present: member, Columbus Center Building Operations Committee
2011: Chair, UMCES-IMET Promotion & Tenure Committee
2011-present: IMET representative to Conflict of interest Committee
2012: member, UMCES Presidential review committee
2013: member, IMET Assistant Director search committee
2013/14: member, IMET FY 14 faculty search
2013: IMET representative to UMCES Graduate Council
2013: Chair, CUSF Elections committee
2013: member, UMCES MEES Taskforce, summer 2013
2013: Chair, UMCES graduate faculty subcommittee for UMCES Presidential graduate fellowships.

Community

summer, 1992/93: participant mentor, Martin Marietta Program for area high school teachers

summer, 1992: participant mentor, Notre Dame's Sandals Program for area high school students
1992-present: participant mentor, Baltimore Community College Biotechnology internship program
1994-1999: member, Baltimore Community College Biotechnology Program Curriculum Committee
1994-present: President, Roundhouse Square Homeowners Association, annual budget ~$60,000 per year
1995: participant mentor, NASA Sharp Plus internship program
1995-present: member, National Aquarium in Baltimore, Animal Policy Committee
1997- present: participant mentor in Howard County's Public School System Gifted and Talented Intern Program
1998/99: provided sabbatical research experience for Dr. Kathleen Norris, head of Biotechnology Program, BCCC
1997-2000: provided research enrichment experiences for J. Eric Witzel, head of Science Department, Loyola Blakefield High School
2000-present: participant mentor in Baltimore City's Ingenuity Program
2000-present: participant mentor, Internship Program for Baltimore's Biotechnology Institute (lab tech prep)
2003-present: member, fundraising committee, Pigtown Mainstreet Program
2004/06: participant mentor, Montgomery County's ExPert Program for high school teachers.
2004/05: member, Biotechnology Group Advisory Program, Sojourner-Douglass College, Baltimore, MD.
2006: member, Governor's Task Force on Minorities in the Environmental Community, MD.
2006: facilitator for high school interns from ACCE High School Baltimore
2008-2012: board member, Pigtown Mainstreet Program
2008: board member, Washington Blv/Pigtown Neighborhood Planning Council
2008: facilitator, Eastern Shore Restoration and Education Program
2008: facilitator, UMES Upward Bound Program
2012: facilitator, Healthy Harbors Initiative, Baltimore

INVITED TALKS 1991-present

January, 1991: "Regulation of maternal mRNA utilization in sea urchin eggs and early embryos", University of Harvard, Department of Biology.
January, 1991: "Regulation of eIF-2 activity by vaccinia virus", Genetics Institute, Cambridge, MA.
March, 1991: "Regulation of eIF-2B activity by fertilization induced increases in redox potential", ICN meeting on Translational Control, Tamarron.
October, 1991: "Troubleshooting Coupled Transcription/Translation Systems", Promega Corporation, Madison, WI.
June, 1992: "Effect of vaccinia virus K3L gene product on activity of eIF-2α-PK$_{ds}$", University of Washington, Department of Microbiology.
September, 1992: "Recombinant vaccinia virus K3L gene product prevents activation of dsRNA-dependent, eIF-2α-specific protein kinase", Cold Spring Harbor Symposium of Translational Control.
October, 1992: "Regulation of eIF-2 by vaccinia virus", CARB, UMBI.

January, 1993: "Regulation of eIF-2 activity by vaccinia virus", Department of Biology, Johns Hopkins University.
January, 1993: "Fertilization-induced increases in protein synthesis initiation factor activities", Developmental Biology of the Sea Urchin, VIII, Asilimar, CA.
September, 1993: "Interaction of vaccinia virus K3L gene product with the dsRNA-dependent eIF-2α-specific protein kinase", Wellcome Symposium on Translational Control and Cancer, Wellcome Centre for Medical Research, London, UK.
September, 1993: "Transdominant regulation of PKR by a catalytically inactive variant", ICRF, London, UK.
September, 1993: "Mechanism of action of sea urchin inhibitor of eIF-4", University of Sussex, UK.
October, 1993: "Effects of vaccinia virus K3L and E3L gene products on eIF-2α-specific protein kinase activity", Hershey Medical Center, Hershey, PA.
November, 1993: "Mechanism of action of sea urchin inhibitor of eIF-4", Medical College of Louisiana, Shreveport, LA.
February, 1994: "Effects of vaccinia virus K3L and E3L gene products on eIF-2α-specific protein kinase activity", Molecular and Cellular Biosciences Program, Medical College of South Carolina, Charleston, SC.
September, 1994: "Expression of nonfunctional PKR mutants mitigates the effects of serum or cell density on PKR activation state and eIF-2α phosphorylation state in NIH-3T3 cells", Cold Spring Harbor Symposium of Translational Control.
January, 1995: "Role of PKR in virus defense and regulation of cell proliferation", Department of Microbiology and Immunology, UMB, Baltimore, MD.
April, 1995: "Development of continuous sea urchin cell lines", First International Workshop on Transgenesis of Invertebrates of Medical, Agricultural and Aquacultural Importance", Montpellier, France.
July, 1995 "Role of elF-2α phosphorylation in the regulation of cell proliferation rate" Winship Cancer Center, University of Emory School of Medicine, Atlanta, GA.
November 1995: "Deregulation of PKR in breast carcinoma cells" International Society for Interferon and Cytokine Research, Baltimore, MD.
November 1995: "PKR and the regulation of cell proliferation in breast carcinoma cells". NATO meeting on Translational Control and Cancer, Centro de Biologica Molecular "Severo Ochoa", Madrid, Spain.
December, 1995: "Role of PKR in virus defense and regulation of cell proliferation" Department of Molecular Microbiology and Immunology, Johns Hopkins School of Public Health.
April, 1996: "Development of continuous sea urchin cell lines" National Shellfisheries Association Meeting, Baltimore, MD.
September, 1996: "Inhibitor of PKR in breast carcinoma cells", Cold Spring Harbor Symposium on translational Control.
January, 1997: Role of PKR in virus defense and regulation of cell proliferation", Carnegie Institute of Washington Embryology Institute.
May, 1997: "Use of dicistronic vectors in sea urchin embryos" Second International Workshop on Transgenesis of Invertebrates, Asilomar, CA.
November, 1997: "Transdominant inhibitor of PKR in breast carcinoma cells." DOD Breast Cancer Research Program Era of Hope Meeting, 1997, Washington, D.C.
March, 1998: Regulation of PKR, Biochemistry Department, University of Sussex, U.K.
April, 1998: PKR, apoptosis and cancer, Department of Anatomy & Physiology, University of Dundee.

November, 1998: Translational factors and mammary gland development, Gene Evaluation and Mapping Laboratory, USDA-ARS-Livestock and Poultry Science Institute, USDA Beltsville.
February, 1999: PKR, apoptosis and cancer, University of Miami Cancer Center.
June 1999: Identification of rainbow trout PKR and its activation by IPNV, 1999 Translation, U.K. Meeting, Dundee, U.K.
August 1999: Use of translation initiation factor eIF4E as a marker for growth in cultured marine invertebrate cells, Third Invertebrate Transgenesis Meeting, Crete.
October 1999: eIF4E family in zebrafish development, University of Algarve, Portugal.
March 2000: Two isoforms of zebrafish eIF4E are functionally divergent and differentially expressed, University of Tel Aviv, Israel.
March 2000: Role of 4EHP and PKR in lactating mammary gland, Volcani Institute, Rehovot, Israel.
March 2000: Role of an interferon-induced protein kinase, PKR, in the molecular pathogenesis of fish viruses, National Center of Mariculture, Eilat, Israel.
October 2000: Translation initiation factor eIF4E as a marker for growth in cultured oyster cells. International Marine Biotechnology Conference, Townsville, Australia.
October 2000: Identification of PKR in rainbow trout cell lines and its activation by infectious pancreatic necrosis virus. International Marine Biotechnology Conference, Townsville, Australia.
February 2001: eIF4E family members in zebrafish, Department of Biochemistry & Molecular Biology, University of Indiana School of Medicine, Bloomington, IN.
May 2001: eIF4E family members in zebrafish, Winship Cancer Center, Emory University School of Medicine, Atlanta, GA.
September 2001: Role of PKR and eIF2α phosphorylation in IPNV pathogenesis. International Symposium on Fish Virus Pathogenesis and Disease Control. Taiwan
October 2001: eIF4E family members in zebrafish, ATCC, Manassas, VA.
March 2002: Translational factors and mammary gland development, Center of Reproductive Studies, Albert Einstein College of Medicine, NY.
April 2002: Translational factors and mammary gland development, NIH/Hennighausen Mammary Gland Retreat, MD.
January 2003: Comparative analyses of mammalian eIF4E family members, Johns Hopkins University RNA Club, January 2003.
July 2003: PKR and phosphorylation of eIF2alpha in host defense against Infectious Pancreatic Necrosis Virus in rainbow trout RTG-2 cells. International Society of Comparative and Developmental Biology, St. Andrews, U.K.
September 2004: Components of interferon-regulated innate immune response in zebrafish. Aquatic Animal Models of Human Disease Conference, ATCC/University of Miami, Manassas, VA.
March 2004: Interferon, PKR and phosphorylation of eIF2α in innate immune response to virus infection in fish. World Aquaculture Society Meeting, Honolulu.
November 2004: From Archaea to Zebrafish: evolving model systems in the postgenomic era, Israeli Maritime College Marine Biotechnology Conference.
November 2005: Diversity of Eukaryotic Translation Machinery, Norwegian College of Fishery Science, Institute of Marine Biotechnology Tromso, Norway.
July 2006: Interferon-upregulated eIF2α-kinases in fish. International Society of Comparative and Developmental Biology, Charleston, SC, July 2006.

September 2006: Interferon-upregulated eIF2α-kinases in fish. Cold Spring Harbor Symposium on Translational Control, September, 2006.
September, 2006: Comparative analyses of 4E-BP family members. Cold Spring Harbor Symposium on Translational Control.
March 2007: Comparative analyses of eIF4E-family members in fish. 2007, 8th IMBC, Eilat, Israel.
March 2007: The interferon-upregulated eIF2α-kinases in fish. 2007 8th IMBC, Eilat, Israel.
June 2007: Atlantic salmon possesses two interferon inducible eIF2alpha kinases; PKR and PKZ. 7th International Symposium on Fish Immunology, Sterling, UK.
April 2008: Role of zebrafish eIF4E-1B in meiotic maturation, Carnegie Institute Department of Embryology.
September 2008: Identification of two eIF4E family members with distinctive cap binding properties in dinoflagellates. Cold Spring Harbor Symposium on Translational Control.
November 2008: eIF4E family members from dinoflagellates to zebrafish, School of Biomedical Sciences, University of Nottingham Medical School, U.K.
April 2009: Role of zebrafish eIF4E-1B in oocyte maturation, BALZEE meeting, Carnegie Institute, Baltimore.
October 2010: Use of IMPACT-CN system (pTYB4) and λ-protein phosphatase to study the role of phosphorylation in the activation of zebrafish PKR. ASBMB Workshop on Post-Translational Modifications, Lake Tahoe, 2010.
July 2010: eIF4E family members in zebrafish, University of Nottingham School of Medicine, UK, July 2010.
May 2011: Translational Regulation of gene expression in dinoflagellates, NOAA-NMFS Laboratory, Sandy Hook, NJ.
July 2011: eIF4E in protists. Department of Molecular and Cellular Biology, U.C. Davis, CA.
August 2011: Translational regulation of gene expression in dinoflagellates, Woods Hole, MA.
October 2011: eIF2α phosphorylation in response to diet and stressors in zebrafish and cobia, RSMAS, Miami, FL.
February 2013: Translational regulation in dinoflagellates, Hollins Marine Laboratory, Charleston, SC.
Jagus, R. eIF2α phosphorylation in response to diet and stressors in zebrafish and cobia. Gazes Cardiac Research Institute, Charleston, S.C. February 2013.
Bachvaroff, T. R. & **Jagus, R.** Dinoflagellate and Algal Genomics, Plenary Talk, The Amazing Dinoflagellates, 10th International Marine Biotechnology Conference, Brisbane, Australia, 11/03/13.
Jagus, R. Role of eIF4Es in translational regulation in dinoflagellates. 10th International Marine Biotechnology Conference, Brisbane, Australia, 11/03/13.
Jagus, R. Diversity of eIF4Es: the multiple uses of a novel eukaryotic fold, Queensland Medical Research Institute, Brisbane 11/13.
Jagus, R. Translation regulation of gene expression in toxic dinoflagellates. OHH Grantee Conference at the Scripps Center for Oceans & Human Health, Scripps Institute of Oceanography, San Diego CA, March 27-28, 2014.
Jagus, R. Origins and evolution of eIF4E family members in zebrafish. RNA Club, UMB, April 2015.

Jagus, R. Translational Control, NIST Hollins Marine Laboratory, Charleston, S.C, May, 2015.
Jagus, R. Expansion of eIF4E and 4E-BP family members with radiation of the teleosts. MRC Centre for Reproductive Health, University of Edinburgh, September, 2015.
Jagus, R. It's all about translation. Department of Biology & Physics, Kennesaw University. October 2015.

PUBLICATIONS:

Smith, J.A., Robinson, J.H., **Jagus, R.**, and King, R.J.B.: Stimulation of cell proliferation by steroids. In, Talwar, G.P. (ed): Regulation of Growth and Development in Eukaryotic Cells. Raven Press, New York, 355-367, 1975.

King, R.J.B., **Jagus, R.**, Robinson, J.H., and Smith, J.A.: Steroid hormones and the control of tumour growth: Studies on androgen-responsive tumour cells in culture. In Pasqualini, J.R. (ed): Receptors and Mechanisms of Steroid Hormones. Marcel Dekker, 1976.

Safer, B., Kemper, W., and **Jagus, R.**: Identification of a 48S preinitiation complex in reticulocyte lysate. J. Biol. Chem. **253**, 3384-3386, 1978.

Jagus, R.: RNA metabolism in an androgen-responsive mouse mammary carcinoma, Sh115, in culture. Exptl. Cell Res. **118**, 115-125, 1979.

Jagus, R., and Kay, J.E.: Distribution of lymphocyte mRNA during stimulation by phytohaemagglutinin. Eur. J. Biochem. **100**, 503-510, 1979.

Wallace, D.M., **Jagus, R.**, Benzie, C.R., and Kay, J.E.: Translational activity of mRNA isolated from unstimulated and phytohaemagglutinin-activated lymphocytes. Biochem. J. **184**, 277-282, 1979.

Safer, B., and **Jagus, R.**: Control of eIF-2 phosphatase activity in rabbit reticulocyte lysate. Proc. Natl. Acad. Sci. **76**, 1094-1098, 1979.

Jagus, R., and Safer, B.: Quantitation and localization of globin mRNA in rabbit reticulocyte lysate. J. Biol. Chem. **254**, 6865-6868, 1979.

Safer, B., **Jagus, R.**, and Kemper, W.: Use of [^{14}C] eIF-2 to measure the endogenous pool size of eIF-2 in rabbit reticulocyte lysate. J. Biol. Chem. **254**, 8091-8094, 1979.

Safer, B., **Jagus, R.**, and Kemper, W.: Analysis of initiation factor function in highly fractionated and unfractionated reticulocyte lysate systems. Methods in Enzymology **60**, 61-86, 1979.

Kay, J.E., Wallace, D.M., Benzie, C.R., and **Jagus, R.**: Regulation of protein synthesis during lymphocyte activation. In, Quastel, M.R. (ed): Cell Biology and Immunology of Leukocyte Function. Academic Press, New York, 107-117, 1979.

Safer, B., **Jagus, R.**, and Crouch, D.: Indirect activation of eIF-2 in reticulocyte lysate by selenite. J. Biol. Chem. **255**, 6913-6917, 1980.

Safer, B., **Jagus, R.**, Crouch, D., and Kemper, W.: In, Thomas, G., Podesta, E.J., and Gordon, J. (eds): Protein Phosphorylation and Bioregulation, FMI-EMBO Workshop, Karger, Basel, 142-153, 1980.

Jagus, R., and Safer, B.: Activity of eIF-2 is modified by processes distinct from phosphorylation. I. Activities of eIF-2 and eIF-2 alpha kinase in lysates gel- filtered under different conditions. J. Biol. Chem. **256**, 1317-1324, 1981.

Jagus, R., and Safer, B.: Activity of eIF-2 is modified by processes distinct from phosphorylation. II. Activity of eIF-2 is modified by redox state of its sulfhydryl groups. J. Biol. Chem. **256**, 1324-1330, 1981.

Cooper, D.M.F., **Jagus, R.**, Sommers, R., and Rodbell, M.: Cholera toxin modifies diverse GTP-modulated regulatory proteins. Biochem. Biophys. Res. Commun. **101**, 1179-1185, 1981.

Safer, B. and **Jagus, R.**: New developments in the regulation of eIF-2 activity. Biochimie **63**, 709-717, 1981.

Jagus, R., Anderson, W.F., and Safer, B.: Initiation of mammalian protein synthesis. In, Cohn, W. (ed): Progress in Biophysics and Molecular Biology, Academic Press, New York, **25**, 127-185, 1981.

Safer, B., **Jagus, R.**, and Crouch, D.: Both oxidation/reduction and phosphorylation states of eIF-2 regulate protein synthesis initiation. In, Cold Spring Harbor Conference on Cell Proliferation: Protein Phosphorylation, **8**, 979-998, 1981.

Cooper, D.M.F., and **Jagus, R.**: Impaired adenylate cyclase activity of phenylhydrazine-induced reticulocytes. J. Biol. Chem. **257**, 4686-4688, 1982.

Safer, B., Grunberg-Manago, M., Badman, D., Bergman, F., Freeman, C., Galasso, G., **Jagus, R.** and Williams, B. Meeting Report: International Symposium on Transitional/Transcriptional Regulation of Gene Expression. FEBS LETTERS **147**, 1-10, 1982.

Jagus, R., Crouch, D., Konieczny, A., and Safer, B.: The role of phosphorylation in the regulation of eIF-2 activity. In, Horecker, B.L. and Stadtman, E.R. (eds): Current Topics in Cellular Regulation, Academic Press, New York, **21**, 35-62, 1982.

Safer, B., **Jagus, R.**, Konieczny, A., and Crouch, D.: Catalytic utilization of eIF-2 during protein synthesis initiation. In: The Regulation of Hemoglobin Biosynthesis, Elsevier, New York, 1962-175, 1982.

Safer, B., **Jagus, R.**, Konieczny, A., and Crouch, D.: The mechanism of translational inhibition in hemin-deficient lysate. In, Grunberg-Manago, M., and Safer, B. (eds): Translational and Transcriptional Interactions during the Regulation of Gene Expression, Elsevier, New York, 311-326, 1982.

Jagus, R.: Effects of phosphorylation on recycling of eIF-2: eIF-2 distribution and quantitation of eIF-2 and eIF-2B using an immunochemical technique. In, Connor Johnson, B. (ed): Post-translational Covalent Modification of Proteins for Function, Academic Press, New York, 159-179, 1983.

Whitaker-Dowling, P., **Jagus, R.** and Youngner, J.S.: Vaccinia-mediated inhibition of interferon action. In: Rescue of Picornavirus, Ares-Serona Symposia on the Interferon System, Raven Press, New York, 177-182, 1985.

Austin, S.A. Pollard, J.W., **Jagus, R.**, and Clemens, M.: Regulation of polypeptide chain initiation and activity of eIF-2 in CHO mutants containing temperature-sensitive aminoacyl tRNA synthetases. Eur. J. Biochem. **157**, 39-47, 1986.

Hansen, L.H., Huang, W-I. & **Jagus, R.**: Inhibitor of translational initiation prevents utilization of sea urchin maternal mRNA. J. Biol. Chem., **262**, 6114-6120, 1987.

Jagus, R.: Translation in cell-free systems. Methods in Enzymology, Guide to Molecular Cloning Techniques, (eds Berger, S. & Kimmel, A.) **152**, 267-276, 1987.

Jagus, R.: Use of antibodies for the analysis of translation products. Methods in Enzymology, Guide to Molecular Cloning Techniques, (eds, Berger, S. & Kimmel, A.) **152**, 296-304, 1987.

Jagus, R.: Hybrid selection and hybrid arrest of translation. Methods in Enzymology, Guide to Molecular Cloning Techniques, (eds, Berger, S. & Kimmel, A.) **152**, 567-572, 1987.

Whitaker-Dowling, P., **Jagus, R.**, & Youngner, J.S.: Effect of vaccinia on protein synthesis in mouse L-cells infected with VSV. In, Kolatsky, D. and Mahy, B. (eds): Biology of Negative-Strand Viruses, 122-128, 1987.

Huang, W-I., Hansen, L.H., Merrick, W.C., & **Jagus, R.**: Inactivator of eIF-4F in unfertilized sea urchin eggs. Proc. Natl. Acad. Sci., **84**, 6359-6363, 1987.

Jagus, R. & Safer, B.: Second phosphorylation site on alpha subunit of eIF-2 in rabbit reticulocyte lysate. Adv. Cycl. Nucl. Res. & Protein Phos. **11**, 557-5675, 1987.

Jagus, R. & Dowling, J.: Diphtheria: a bacterial disease caused by a toxin that disrupts protein synthesis. In, Glew, R.H. and Peters, S.P. (eds): Clinical Studies in Medical Biochemistry, Oxford University Press, 1987.

Jagus, R. and Pollard, J.W.: Use of dried milk for immunoblotting. Methods in Molecular Biology, **3**, 403-408, 1988.

Akkaraju, G.R., Whitaker-Dowling, P., Youngner, J.S., & **Jagus, R.**: Specific kinase inhibitory factor of vaccinia virus prevents translational inhibition in rabbit reticulocytes. J. Biol Chem. **264**, 10321-10325, 1989.

Maurides, P.M., Akkaraju, G.R. & **Jagus, R.**: Evaluation of phosphorylation state by a combination of vertical slab gel isoelectric focusing and immunoblotting. Anal. Biochem. **183**, 144-151, 1989.

Akkaraju, G.R., Hansen, L.H., & **Jagus, R.**: eIF-2B activity is regulated by developmental changes in redox potential. J. Biol. Chem. **266**, 24451-24459, 1991.

Davies, M., Elroy-Stein, O., **Jagus, R.**, Moss, B., & Kaufmann, R.J.: Vaccinia virus K3L gene potentiates translation by inhibiting DAI kinase (PKR) activation and eIF-2α phosphorylation. J. Virol. **66**, 1943-1950, 1992.

Jagus, R., Huang, W-I., Wilson, M.A., & Hansen, L.H.: Changes in protein synthetic rates and eIF-4 inhibitor on activity in cell-free translation systems of sea urchin embryos prepared during early cleavage stages. J. Biol. Chem. **267**, 15530-15536, 1992.

Carroll, K., Elroy-Stein, O., Moss, B., & **Jagus, R.**: Recombinant vaccinia virus pK3, a homologue of eIF-2α, inhibits activation of eIF-2α-PK_{ds} (PKR) *in vitro*. J. Biol. Chem **268**, 12837-12842, 1993.

Stern, B. D., Wilson, M. A., & **Jagus, R.**: Use of non-reducing SDS-PAGE for monitoring renaturation of recombinant protein synthesis initiation factor, eIF-4E. Protein Expression and Purification, **4**, 320-327, 1993.

DiRuggiero, J., Robb, F. T., **Jagus, R.**, Klump, H. H., Borges, K. M., Kessel, M., Mai, X., & Adams, M. W. W.: Characterization, cloning and *in vitro* expression of an extremely thermostable glutamate dehydrogenase from a novel hyperthermophilic archeon, ES4. J. Biol. Chem. **268**, 17767-17744, 1993.

Jagus, R., Stern, B., Hiremath, L., & Rhoads, R.: Mechanism of action of a developmentally regulated inhibitor of eIF-4 function in unfertilized sea urchin eggs. Dev. Genetics **14**, 412-423, 1993.

Jagus, R.: TNT system-based production of ^{35}S-labeled eIF4E for functional studies. Promega Notes **42**, 17, 1993.

Barber, G. N., Thompson, S., Lee, T-G., **Jagus, R.**, Strom, T., Baveau, A., & Katze, M. G.: The 58 kDa inhibitor of dsRNA activated protein kinase (PKR) is a TPR protein with oncogenic properties. Proc. Natl. Acad. Sci. **91**, 4278-4282, 1994.

Ito, T., **Jagus, R.**, & May, S. W.: Interleukin-3 stimulates protein synthesis by regulating dsRNA-dependent protein kinase (PKR). Proc. Natl. Acad. Sci. **91**, 7455-7459, 1994.

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Offerman, M.K., J. Zimring, K.H. Mellits, M.K. Hagan, R. Shaw, R.M. Medford, M.B. and **R. Jagus**: Induction of cellular adhesion molecule gene expression by dsRNA in human umbilical vein endothelial cells is associated with phosphorylation of the translational initiation factor, eIF-2α. Eur. J. Biochem., **232**, 28-36 1995.

Barber, G. N., **Jagus**, R., Meurs, E. F., Hovanessian, A., and Katze, M. G. Molecular mechanisms responsible for malignant transformation by regulatory and catalytic domain variants of PKR. *J. Biol. Chem.* **270,** 17423-17428, 1995.

Barber, G., M. Wambach, S. Thompson, **R. Jagus**, and M.G. Katze, Mutants of PKR lacking dsRNA binding domain I can act as transdominant inhibitors and induce malignant transformation. Mol. Cel. Biol., **15**, 3138-3146, 1995.

Donze, O., **R. Jagus**, A.E. Koromilas, W.B. Hershey, and N. Sonenberg, Abrogation of translation initiation factor eIF-2 phosphorylation. EMBO J., **14**, 3828-3834, 1995.

Koromilas, A., C. Cantin, A. Craig, **R. Jagus**, J. Hiscott, and N. Sonenberg, The interferon-inducible protein kinase, PKR, mediates the transcriptional activation of the immunoglobulin κ-gene. J. Biol. Chem., **270**, 25426-25434, 1995.

Jeysuria, P., **Jagus, R.**, Lance, V., & Place, A., The role of P450 aromatse in sex determination of prototheria and non-mammalian vertebrates, in *Molecular Zoology: Advances, strategies and protocols*, J.D. Ferraris and S.R. Palumbi, Editors, Wiley-Liss Inc.: New York. p 483-487, 1996.

Jagus, R. and A. Place, Production of recombinant proteins *in vitro* using coupled transcription/translation reactions, in *Molecular Zoology: Advances, strategies and protocols*, J.D. Ferraris and S.R. Palumbi, Editors, Wiley-Liss Inc.: New York. p 490-492, 1996.

Jagus, R. and A. Place, Production of functional, post-transcriptionally modified terrapin aromatase in a coupled transcription-translation reaction, in *Molecular Zoology: Advances, strategies and protocols*, J.D. Ferraris and S.R. Palumbi, Editors, Wiley-Liss Inc.: New York. p 488-489, 1996.

Jagus, R. and A. Place, Production of transient recombinant integral membrane proteins in COS cells, in *Molecular Zoology: Advances, strategies and protocols*, J.D. Ferraris and S.R. Palumbi, Editors, Wiley-Liss Inc.: New York. p 490-492, 1996.

Swaminathan, S., Rajan, P., Savinova, O., **Jagus, R** & Thimmapaya, B., SV40 large-T antigen bypasses the translational block imposed by the phosphorylation of eIF2α. Virology, **219**, 321-323, 1996.

Savinova, O. and **Jagus, R**., Use of vertical slab gel isoelectric focusing and immunoblotting to evaluate steady state levels of eIF2α phosphorylation in cells. Methods, **11**, 419-425, 1997.

Sharp, T. V., Witzel, J. E., and **Jagus, R.** A homologous region of eIF2α and vaccinia virus K3L gene product interact with the same domain in PKR. Eur. J. Biochem. **250,** 85-92, 1997.

Kimball, S.R., Horetsky, R.L., **Jagus, R.,** & Jefferson, L.S.: Expression and purification of the α–subunit of eIF2: use as a kinase substrate. Protein Expression & Purification, **12**, 415-419, 1998.

Jagus, R., Joshi, B., Miyamoto, S. & Beckler, G.S.: *In vitro* translation systems. Current Protocols in Cell Biology. (eds. Bonifacino, J.S., Dasso, M., Harford, J.B., Lippincott-Schwartz, J. & Yamada, K.M.) John Wiley & Sons, Inc. New York, 11.2.1-11.2.26, 1998.

Jagus, R. & Beckler, G.S.: Overview on *in vitro* translation systems. Current Protocols in Cell Biology. (eds. Bonifacino, J.S., Dasso, M., Harford, J.B., Lippincott-Schwartz, J. & Yamada, K.M.) John Wiley & Sons, Inc. New York, 11.1.1-11.1.13, 1998.

Sharp, T.V., Moonan, F., Romashko, A., Joshi, B., Barber, G.N. & **Jagus, R**.: The E3L gene product interacts with both the regulatory and catalytic domains of PKR: implications for PKR regulation. Virology, **250**, 302-315, 1998.

Hofman, E.R., Boyanapalli, M., Lindner, D.J., Weihua, X., Hassel, B.A., **Jagus, R.,** Gutierrez, P.L., Kalvakolanu, D.V.: Thioredoxin reductase mediates cell death effects of the combination of beta interferon and retinoic acid. Mol. Cell Biol., **18**, 6493-6504, 1998.

Savinova, O., Joshi, B. and **Jagus, R**.: Abnormal levels and minimal activity of the dsRNA-activated protein kinase, PKR, in breast carcinoma cells. Int. J. Biochem. and Cell Biol. **31**, 175-189, 1999.

Jagus, R., Joshi, B. & Barber, G. N.: PKR, apoptosis and cancer. Int. J. Biochem. and Cell Biol. **31**, 123-138, 1999.

Sharp, T. V., Raine, D. R., Gewert, D. R., Joshi, B., **Jagus, R.**, & Clemens, M. J.: Activation of the interferon-inducible (2'-5') oligoadenylate synthetase by the Epstein-Barr virus RNA, EBER-1. Virology, **257**, 303-313, 1999.

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Gerlitz, G., **Jagus, R.**, and Elroy-Stein, O.: Phosphorylation of eIF2 is required for activation of internal translational initiation during cell differentiation. Eur. J. Biochem. **269**, 2810-2819, 2002.

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