

## CURRICULUM VITAE

Anne Brunet, PhD  
Assistant Professor  
Department of Genetics  
Stanford University  
Stanford CA 94305

### Education

1992 B.Sc. Biology, Ecole Normale Supérieure, University of Paris VI, France.  
1992-1997 Ph.D., University of Nice, France. Dr. Jacques Pouyssegur's laboratory  
1998-2003 Post-doctoral training, Dr. Michael E. Greenberg's laboratory, Harvard Medical School, Boston, MA, USA.

### Research Experience

1991 Undergraduate research, Dr. Jean Massoulié's laboratory, Department of Neuroscience, Ecole Normale Supérieure, Paris  
1992 Undergraduate research, Dr. Philippe Brûlet's laboratory, Department of Developmental Biology, Pasteur Institute, Paris  
1992-1997 Graduate student, Dr. Jacques Pouyssegur's laboratory, University of Nice  
1993 EMBO exchange student, Dr. Olaf Nielsen's laboratory, Institute of Molecular Biology of Copenhagen  
1998-2003 Post-doctoral fellow, Dr. Michael Greenberg's laboratory, Harvard Medical School  
2004-present Assistant Professor of Genetics, Stanford University School of Medicine

### Honors and Awards

1992 B. Sc. *summa cum laude*  
1993-1997 Pre-doctoral fellowship, Ecole Normale Supérieure  
1993 EMBO short-term fellowship  
1997 EMBO long-term post-doctoral fellowship  
1998-2000 Human Frontier Science Program post-doctoral fellowship  
2000 Medical Foundation post-doctoral Fellowship  
2000-2002 Goldenson-Berenberg post-doctoral Fellowship, Harvard Medical School  
2003 Radcliffe Institute for Advanced Studies Fellowship  
2003 Lacaze-Policart Lacassagne Prize, Académie des Sciences, France  
2005 Pfizer/AFAR Innovation in Aging Research Award  
2005 Klingenstein Award in the Neurosciences  
2005 Ellison Medical Foundation Scholar Award (*awarded*)  
2005 Damon Runyon Scholar Award (*awarded*)  
2006 Sloan Research Fellowship  
2006 Brain Tumor Foundation Award  
2007 Glenn Award for Research in Biological Mechanisms of Aging  
2007 McCormick Award for Women in Science  
2008 California Institute of Regenerative Medicine New Faculty Award

## List of Publications

### Peer-reviewed articles

Lenormand, P., Sardet, C., Pagès, G., L'Allemain, G., Brunet, A. and Pouyssegur, J. (1994) Growth factors induce nuclear translocation of MAP kinases (p42mapk and p44mapk) but not their activator MAP kinase kinase (p45mapkk) in fibroblasts. **J. Cell. Biol.** 122: 1079-1088.

Pagès, G.\*, Brunet, A.\*, L'Allemain, G. and Pouyssegur, J. (1994) Constitutive mutant and putative regulatory serine phosphorylation site of mammalian MAP kinase kinase (MEK1). **EMBO J.** 13: 3003-3010. \*: both authors have contributed equally to the work.

Brunet, A.\*, Pagès, G.\* and Pouyssegur, J. (1994) Growth factor-stimulated MAP kinase induces rapid retrophosphorylation and inhibition of MAP kinase kinase (MEK1). **FEBS Lett.** 346: 299-303. \*: both authors have contributed equally to the work.

Brunet, A., Pagès, G. and Pouyssegur, J. (1994) Constitutively active mutants of MAP kinase kinase (MEK1) induce growth factor-relaxation and oncogenicity when expressed in fibroblasts. **Oncogene** 9: 3379-3387.

Papin, C., Eychène, A., Brunet, A., Pagès G., Pouyssegur, J., Calothy, G. and Barnier, J.V. (1995) B-Raf protein isoforms interact with and phosphorylate MEK-1 on serine residues 218 and 222. **Oncogene** 10: 1647-1651.

Pagès, G., Stanley, E.R., Le Gall, M., Brunet, A. and Pouyssegur, J. (1995) The mouse p44 mitogen-activated protein kinase (extracellular signal-regulated kinase 1) gene. **J. Biol. Chem.** 270: 26986-26992.

Brunet, A. and Pouyssegur, J. (1996) Identification of MAP kinase domains by re-directing stress signals into growth factor responses. **Science** 272: 1652-1655.

Lavoie, J.N., L'Allemain, G., Brunet, A., Müller, R. and Pouyssegur, J. (1996) Cyclin D1 expression is regulated positively by the p42/p44MAPK and negatively by the p38/HOG MAPK pathway. **J. Biol. Chem.** 271: 20608-20616.

Brondello, J-M., Brunet, A., Pouyssegur, J. and McKenzie, F.R. (1997) The dual specificity Mitogen-activated protein kinase phosphatase-1 and-2 are induced by the p42/p44MAPK cascade. **J. Biol. Chem.** 272: 1368-1376.

Briant, L., Robert-Hebmann, V., Sivan, V., Brunet, A., Pouyssegur, J. and Devaux, C. (1998) Involvement of extracellular signal-regulated kinase module in HIV-mediated CD4 signals controlling activation of nuclear factor-kappa B and AP-1 transcription factors. **J. Immunol.** 160: 1875-1885.

Englaro, W., Bertolotto, C., Busca, R., Brunet, A., Pagès, G., Ortonne, J-P and Ballotti, R. (1998): Inhibition of the mitogen-activated protein kinase pathway triggers B16 melanoma cell differentiation. **J. Biol. Chem.** 273:9966-9970.

Lenormand, P., Brondello, J.-M., Brunet, A. and Pouyssegur, J. (1998) Growth factor-induced p42/p44 MAPK nuclear translocation and retention requires both MAPK activation and neosynthesis of nuclear anchored proteins **J. Cell Biol.** 142:625-33.

Brunet, A., Roux, D., Lenormand, P., Dowd, S., Keyse, S. and Pouyssegur, J. (1999) Nuclear translocation of p42/p44 mitogen-activated protein kinase is required for growth factor-induced gene expression and cell cycle entry. **EMBO J.** 18: 664-74.

Brunet, A., Bonni, A., Zigmond, M.J., Lin, M.Z., Juo, P., Hu, L.S., Anderson, M.J., Arden, K.C., Blenis, J., Greenberg, M.E. (1999) Akt promotes cell survival by phosphorylating and inhibiting a Forkhead transcription factor. **Cell** 96: 857-868.

Bonni, A., Brunet, A., West, A.E., Datta, S.R., Takasu, M.A., Greenberg, M.E. (1999) Cell survival promoted by the Ras-MAPK signaling pathway by transcription-dependent and transcription-independent mechanisms. **Science**, 286:1358-1362.

Nichols, A., Camps, M., Gillieron, C., Chabert, C., Brunet, A., Wilsbacher, J., Cobb, M., Pouyssegur, J., Shaw, J.P., Arkinstall, S. (2000) Substrate recognition domains within extracellular signal-regulated kinase mediate binding and catalytic activation of mitogen-activated protein kinase phosphatase-3. **J Biol Chem.** 275: 24613-21.

Brunet, A., Park, J., Tran, H., Hu, L.S., Hemmings, B.A., Greenberg, M.E. (2001) The protein kinase SGK mediates survival signals by phosphorylating the Forkhead transcription factor FKHL1/FOXO3a. **Mol. Cell Biol.** 21:952-965.

Shin, I., Bakin, A.V., Rodeck, U., Brunet, A., Arteaga, CL. (2001) Transforming growth factor beta enhances epithelial cell survival via Akt-dependent regulation of FKHL1. **Mol. Biol. Cell.** 12 :3328-39.

Brunet, A.\*, Kanai, F.\*, Stehn, J., Xu, J., Sarbassova, D., Frangioni, D., Dala, J.V., DeCaprio, J.A., Greenberg, M.E. and Yaffe, M.B. (2002) 14-3-3 Transits to the Nucleus and Actively Participates in Dynamic Nucleo-Cytoplasmic Transport. **J. Cell Biol.** 156:817-828 \*: both authors have contributed equally to the work.

Tran, H.\* , Brunet, A.\*, Grenier, J.M., Datta, S.R., Fornace, Jr., A.J., DiStefano, P.S., Chiang, L.W. and Greenberg, M.E. (2002). DNA repair pathway stimulated by the Forkhead transcription factor FOXO3a (FKHL1) through the GADD45 protein. **Science** 296:530-4. \*both authors have contributed equally to the work.

Chou, F.L., Hill, J.M., Hsieh, J.C., Pouyssegur, J., Brunet, A., Glading, A., Uberall, F., Ramos, J.W., Werner, M.H. and Ginsberg, M.H. (2003). PEA-15 binding to ERK1/2 MAP kinases is required for its modulation of integrin activation. **J. Biol. Chem.** 278(52): 52587-97.

Brunet, A., Sweeney, L.B., Sturgill, F.J., Chua, K.F., Greer, P.L., Lin, Y., Tran, H., Ross, S.E., Mostoslavsky, R., Cohen, H., Hu, L.S., Cheng, H.-L., Jedrychowsky, M., Gygi, S.P., Sinclair, D.A., Alt, F.W., Greenberg M.E. (2004) Stress-Dependent Regulation of FOXO transcription factors by the SIRT1 Deacetylase. **Science** 303: 2011-5. Advanced online publication.

Greer, E.L., Oskoui, P.R. Banko, M.R., Maniar, J.M., Gygi, M.P., Gygi, S.P., and Brunet A. (2007) The energy sensor AMP-activated protein kinase directly regulates the mammalian FOXO3 transcription factor. **J. Biol. Chem** 282:30107-19.

Greer, E.L., Dowlatshahi, D., Banko, M.R., Hoang K., Blanchard, D., and Brunet, A. (2007) An AMPK FOXO pathway mediates the extension of lifespan induced by a novel method of dietary restriction in *C. elegans*. **Current Biology** 17:1646-56.

Greer, E.L. and Brunet, A. (2009) Different dietary restriction regimens extend lifespan by both independent and overlapping genetic pathways in *C. elegans* **Aging Cell (in press)**

### **Invited Reviews**

Brunet, A., Brondello, J.M., L'Allemain, G., Lenormand, P., McKenzie, F., Pagès, G. and Pouyssegur, J. (1995) MAP kinase module: role in the control of cell proliferation **C R Seances Soc Biol** 189:43-57

Brunet, A. (1998): Signal transduction from membrane to the nucleus: variation on common themes. **Bull. Cancer** 85(6):527-37

Brunet, A. and Pouyssegur, J. (1997) Mammalian MAP kinase modules: how to transduce specific signals. **Essays Biochem.** 32:1-16.

Datta, S.R., Brunet, A. and Greenberg, M.E. (1999) Cellular survival: a play in three Akts. **Genes & Dev.** 13: 2905-2927.

Brunet, A., Datta, S.R. and Greenberg, M.E. (2001) Transcription-dependent and -independent control of neuronal survival by the PI3K-Akt signaling pathway. **Curr. Opin. Neurobiol.** 11: 297-305.

Tran, H., Brunet, A., Griffith, E., and Greenberg, M.E. The Many Forks in FOXO's Road. **Sci STKE.** (2003 Mar 4 )(172):RE5.

Brunet, A., Tran, H. and Greenberg, M.E. The FOXO family of transcription factors: key targets of the PI3K-Akt pathway that regulate cell proliferation, survival and organismal aging. **Handbook of Cellular Signaling** 2003.

Greer, E. L., and Brunet, A. (2005). FOXO transcription factors at the interface between longevity and tumor suppression. **Oncogene** 24, 7410-7425.

Carter, M.E., and Brunet, A. (2007). FOXO transcription factors. **Current Biology** 7(4): R113-114

Brunet, A. and Rando T. (2007) From stem to stern. **Nature** 449: 288-289.

Brunet, A. (2007). Aging and cancer: killing two birds with one worm. **Nature Genetics** 39:1306-1307.

Greer, E. L., and Brunet, A. (2008) FOXO transcription factors in ageing and cancer. **Acta Physiol.** 192:19-28.

Greer, E. L., and Brunet, A. (2008). Signaling networks in aging. **Journal of Cell Science** 121:407-412.

Calnan, D. R., and Brunet, A. (2008). The FoxO code. ***Oncogene*** 27:2276-2288.

Salih, D. A. M. and Brunet, A. (2008). FoxO transcription factors in the maintenance of cellular homeostasis during aging. ***Current Opinion in Cell Biology*** 20:126-136.

## **Invited presentations**

### ***Meetings***

**Jacques Monod Conference**, Aussois, France. Sep 8-12, 1996.

"Molecular determinants of specificity within the MAPK modules"

**Cold Spring Harbor Meeting** "Programmed Cell Death" Sep 29-Oct 3, 1999.

"Akt promotes cell survival by phosphorylating and inhibiting a Forkhead transcription factor."

**European meeting of Neuroscience**, Brighton, UK. Jun 25-28, 2000.

"Akt promotes cell survival by phosphorylating and inhibiting a Forkhead transcription factor."

**International meeting "Signals in cell stress, survival and apoptosis"**. Turku, Finland. Dec 7-8 2000. "Transcription dependent and independent survival mechanisms of the PKB/Akt and the Ras-MAPK signaling pathways"

**Cold Spring Harbor Meeting** "Programmed Cell Death" Nov 9-13, 2001.

"The Forkhead transcription factor FKHL1 participates in the cellular response to oxidative stress"

**International Signalling Symposium** "Signalling the Future", Liverpool, UK. Sep 4-6, 2002.

"Signals controlling transcription and apoptosis"

**Cold Spring Harbor Meeting** "Molecular Genetics of Aging": Oct 2-6, 2002.

"Mammalian forkhead transcription factors-Role in the stress response and longevity?"

**FASEB Research Conference** "Protein Kinases" SnowMass, Jul 22-29, 2003.

"The Forkhead transcription factors in the control of apoptosis, resistance to stress, and organismal longevity"

**Gordon Research Conference** "Molecular Mechanisms of Hormone Action", New-Hampshire, Jul 27-31 2003.

"The Forkhead transcription factors in the control of apoptosis, resistance to stress, and organismal longevity"

**Arolla Workshop 2003**, "Growth control in development and disease", Arolla, Switzerland, Aug 18-24, 2003.

"The Forkhead transcription factors in the control of apoptosis, resistance to stress, and organismal longevity"

**Upstate Cell Signaling Symposium**. Dundee Scotland, Jun 6-9, 2004.

"The Forkhead transcription factors in the control of apoptosis, resistance to stress, and organismal longevity"

**Aging and Human Disease Meeting Organized by Cell Press.** Abbazia di Spineto, Italy, Nov 4-6, 2004. "PI3K pathway and FOXO"

**Networks in Growth, Death, and Aging** Kavli Institute for Theoretical Physics in Santa Barbara Jan.31-Feb.11, 05.  
"Molecular bases of longevity: role of FOXO transcription factors"

**Cold Spring Harbor Meeting.** "PTEN pathways" Cold Spring Harbor, March 15-19, 2006  
"FOXO transcription factors in longevity"

**ASBMB meeting** San Francisco, April 1-5, 2006  
"FOXO transcription factors in longevity"

**CNIO Cancer Conference.** "PTEN and the AKT route" Madrid, Spain, May 8-10, 2006  
"FOXO transcription factors in longevity"

**Gordon Conference** Phosphorylation&G-protein mediated signaling networks, University of New England, Biddeford, Me, June 11-16  
"FOXO transcription factors in aging"

**20<sup>th</sup> IUBMB International Congress of Biochemistry and Molecular Biology** and 11<sup>th</sup> FAOBMB Congress, Kyoto Japan, June 18-23, 2006  
"The insulin-Akt-FOXO transcription factors in longevity"

**Steiner Foundation Meeting,** Brunnen, Switzerland, November 16–19  
"FOXO transcription factors in longevity"

**Keystone Symposia** Cell Signaling and Proteomics, Steamboat Spring, March 22 - 27, 2007  
"Signaling networks in aging and longevity"

**American Association for Cancer Research Annual Meeting,** Los Angeles  
April 14-18, 2007  
"FOXO transcription factors at the interface between aging and cancer"

**Xth International Symposium on Insulin Receptors and Insulin Action**  
Stockholm Sweden May 2-6, 2007  
"FOXO transcription factors in aging"

**The PI3K-PTEN-AKT-TOR Signaling Pathway in Cancer, Metabolism, and Aging.** The New York Academy of Science, May 11 2007.  
"FOXO Transcription Factors in Aging"

**FASEB Summer Research Conference Obesity, Energy Balance and Disease,** Indian Wells, California, August 4-9, 2007  
"Genetic regulation of mechanisms for caloric restriction in worms and mammals"

**The 4<sup>th</sup> key symposium Biology of Ageing.** Stockholm, September 16-20 2007  
"FOXO transcription factors complexes and insights into organismal longevity."

**Buck Institute Symposium on Nutrient Signaling and Aging,** Novato, California, November 12-14 2007.

“FOXO transcription factors in aging”

**Keystone Symposia “Metabolic Pathways of Longevity”**, Copper Mountain, Colorado, March 30–April 4, 2008

FOXO transcription factors: central sensors of environmental stimuli that regulate longevity

**American Diabetes Association (68<sup>th</sup> Scientific Sessions)** San Francisco, June 6–10, 2008

FOXO transcription factors in insulin and nutrient signaling

**International Symposium on Olfaction and Taste**, San Francisco, July 21–26 2008

FOXO transcription factors: central sensors of environmental stimuli that regulate longevity

**California Institute of Regenerative Medicine Annual Meeting**, San Francisco, September 19 2008

Aging and stem cells

**Cold Spring Harbor Meeting on the Genetics of Aging**, Cold Spring Harbor, September 24–28, 2008

Aging and stem cells

**Harvard/California meeting on Stem Cell Biology**. Los Angeles, October 10–11, 2008

FOXO transcription factors in neural stem cells during aging

**2008 San Antonio Nathan Shock Aging Center Conference on Aging** Bandera, Texas, October 23–26

Genetic networks of dietary restriction in *C. elegans*

### **Invited seminars since at Stanford**

**Stowers Institute** March 3, 2004

*“The Forkhead Transcription Factors in the Control of Apoptosis, Resistance to Stress, and Organismal Longevity”*

**University of Texas South Western** in Dallas, April 12, 2005

*“FOXO transcription factors in longevity and the stress response”*

**Cold Spring Harbor Laboratory**, March 16, 2006

*“FOXO transcription factors in longevity”*

**University of California, Irvine**, April 21, 2006

“FOXO transcription factors in the control of longevity”

**University of California, San Diego**, October 19<sup>th</sup>, 2006

“Aging and longevity: role of FOXO transcription factors”

**University of Utah**, April 10, 2008

“Regulation of longevity by FOXO transcription factors”

**Buck Institute for Aging research**, Friday May 16, 2008

“FOXO transcription factors in stem cells and aging”

**Massachusetts General Hospital**, June 4, 2008  
"FOXO transcription factors in stem cells and aging"

**Rockefeller Institute**, December 17, 2008  
"Aging and stem cells"

**Gladstone Institute**, January 22, 2009  
"Aging and stem cells"

## **Funding**

### **Active**

#### **NIH R01 AG026648**

Sponsor: NIH / NIA

09/30/05 – 06/30/10

Title: Forkhead transcription factors in the stress response

Role: PI

#### **NIH R01 AG031198**

01/15/09 – 01/14/14

Sponsor: NIH/NIA

Title: Molecular mechanisms underlying lifespan extension by dietary restriction

Role: PI

#### **NIH R21 AG030464**

Sponsor: NIH / NIA

03/01/08 – 02/28/10

Title: An unbiased search for genes underlying longevity in a short-lived fish model

Role: PI

#### **California Institute of Regenerative Medicine New Faculty Award**

Sponsor: CIRM

04/01/08 – 03/31/13

Title: Molecular mechanisms involved in adult neural stem cell maintenance

Role: PI

#### **Paul Glenn Foundation Award**

Paul Glenn Foundation

09/01/07 – 08/31/09

Role: PI

#### **McCormick Award**

McCormick Foundation

12/01/07 – 11/30/09

Defining the interaction between FOXO and the tumor suppressor p53 in cells and in mice

Role: PI

### **Completed**

#### **Pfizer/AFAR Innovations in Aging Research Award**

Sponsor: Pfizer/American Foundation for Aging Research 07/01/05 – 6/30/07  
Title: Role of FOXO Transcription Factors In Mammalian Longevity  
Role: PI

**Klingenstein Fellowship Award in Neuroscience**

Sponsor: Klingenstein Fund 07/01/05 – 06/30/08  
Title: Role of the FOXO Family of Forkhead Transcription Factors In the Nervous System  
Role: PI

**Fellowship Award Brain Tumor Society**

Sponsor: Brain Tumor Society 09/01/06 – 8/31-08  
Title: Defining the role of Foxo transcription factors and Sirt1 deacetylase in suppressing glioblastoma  
Role: PI

**Sloan Research Fellowship**

Sponsor: Alfred P. Sloan Foundation 09/01/06 – 8/31-08  
Title: Does the Nervous System Regulate Overall Longevity?  
Role: PI

**Investigator-initiated Research Grant**

Sponsor: American Institute for Cancer Research 07/01/06 – 06/30/08  
Title: AMPK: a mediator of caloric restriction's ability to suppress cancer  
Role: PI