

BIOGRAPHICAL SKETCH

NAME <p style="text-align: center; font-weight: bold; font-size: 1.2em;">Claude DESPLAN</p>	POSITION TITLE <p style="text-align: center; font-weight: bold; font-size: 1.2em;">Silver Professor of Biology</p>		
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	Year	FIELD OF STUDY
Ecole Normale Supérieure, St. Cloud, France	Master/Agrégation	1975	Biology
Université Paris VII	PhD	1979	Biochemistry
Université Paris VII	D.Sc.	1983	Molecular Biology
University of California, San Francisco	Postdoc	1984-87	Molecular Genetics

A. Personal Statement

I have been in science for four decades and my enthusiasm is still as fresh as the first day. Over the years, my laboratory has switched from in vitro molecular biology and protein structure, to developmental neurobiology and electrophysiology. We have managed to make significant contributions to all of these fields, in large part, because of the quality of the people I attract to the lab, the best PhD students in our program and exceptional postdocs from all over the world. PhD students and post-docs join my lab because of our excellent scientific output, as well as the very interactive and friendly atmosphere in the lab and the department. Most of my previous PhDs and postdocs have continued on to have brilliant academic careers and remain in close contact with me. I also take my mission as an educator and mentor very seriously, not only for the scientists in my lab but also for the undergraduates at NYU. I teach or have taught the two largest classes of Biology, freshman Principles of Biology and sophomore Molecular and Cell biology II. I believe that I manage to convey the message of science with enthusiasm and passion, and was recently honored with a teaching award from NYU. Many of my undergrads also join the lab as researchers and have coauthored numerous scientific articles (I have nearly a dozen undergrad researchers in the lab every year, and all obtain University funding for their research!). I am also dedicated to serving the community by organizing many meetings and by serving as an editor for several important journals where I try to promote creative science.

B. Positions and Honors.

Professional Experience

1972-75: **Elève Professeur**, Ecole Normale Supérieure, Saint Cloud, France.
 1975-78: **Assistant**, Biophysics, School of Medicine, Hôpital Saint Antoine, University of Paris VI.
 1978-81: **Assistant**, Biochemistry, Ecole Normale Supérieure, Fontenay aux Roses, France.
 1981-84: **Maitre de Conférence**, Biochemistry, ENS Fontenay aux Roses, France.
 1984-87: **Postdoctoral Fellow**, Department of Biochemistry, U.C.S.F., San Francisco.
 1987-92: **Assistant Professor** & Assistant Investigator, HHMI, The Rockefeller University, NY.
 1992-99: **Associate Professor** & Associate Investigator, HHMI, The Rockefeller University, NY.
 1999-present: **Silver Professor**, Dept. Biology, New York University; **Director**, Center for Developmental Genetics; **Affiliate Member**, Center for Neural Science, NYU; Member Neuroscience Institute NYU.

Honors:

1972: Admission at "Ecole Normale Supérieure de Saint Cloud"
1975: "Agregation" Physiology & Biochemistry
1983: Fellowship, Fondation Simone et Cino Del Duca Award
1984: Fellowship from the Association pour la Recherche sur le Cancer
1984-85: Fogarty Postdoctoral Fellowship
1986-87: EMBO Postdoctoral Fellowship
1987-88: Andre Meyer Fellow, Rockefeller Univ.
2004: Silver Professor, NYU
2006: Sokol Award for the Sciences, NYU
2007: Elected Fellow of the New York Academy of Sciences; elected Member of the AAAS
2008: Elected Associate Member of EMBO
2014: "Golden Dozen" Teaching Award, NYU
2016: Grand Prix Charles-Mayer, French Academy of Sciences
2018: Elected member of the National Academy of Sciences
2020: Edwin G. Conklin Medal from the Society for Developmental Biology

External Referee:

NIH Dev-2 Study Section (2007, permanent member 2009-2013, *ad hoc* since)

NIH “BDPE/VIS-C” (permanent member, 1999-2004), Ad hoc since

NIH “Molecular Biology” Study Section (Ad Hoc member, 1995, 1998);

NIH “Cell Biology” (MDCN-4) Study Sections (Ad Hoc member, 1999) .

NSF “Developmental Mechanisms”, 1995-2008.

CNRS ATIP “Developmental and Cellular Biology” (1992-2009).

NIH Laboratory of Molecular Genetics, NICHD, Site Visit (1995, 1997, 2007, 2015).

The Wellcome Trust.

Damon Runyon, Scientific Advisory Committee, 2002-2007.

Fullbright committee (2007)

Pew National Advisory Committee (2012-2019)

Scientific Advisory Boards (last 4 years): EMBL, Heidelberg (2015); Blavatnik National Committee (2012-present; chair in 2015); VIB Leuven, Belgium (2015, 2018); Johns Hopkins (2014); NIH: National Eye Institute, (2014); NeuroPsy Paris-Saclay Institute (2013, 2018); Center for Developmental Biology, Toulouse (2013); Institut Jacques Monod, Paris (2012); Champalimaud Lisbon (2012); CABD, Sevilla (2011, 2018); NYU Abu Dhabi Institute Advisory Committee (2010-2012); Institut Curie, Paris (2011, 2018).

Journal Editorial Boards:

- Editor: Science Board of Reviewing Editors.
PLoS Genetics Associate Editor
Developmental Biology Associate Editor
PLoS Biology Academic Editor
Frontiers Neuroscience Associate Editor
Development, Genes and Evolution (formerly “Roux’s Archives”), Associate Editor

- Editorial boards: Development, EMBO Reports, BMC Dev. Biol., Open Biology.

Reviewer: Nature & Nature family, Cell and Cell press journals, Science, Neuron, PLOS journals, Genes & Development, Current Biology, Development, EMBO J., Mol. Cell. Biol., PNAS, Dev. Biol., J. Neuro., Mech. of Dev., J. Mol. Biol., J. Biol. Chem., Genomics, Trends In Genetics, etc.

C. Selection of publications:

1) Treisman J., Gönczy P., Vashishta M., Harris E., **Desplan C.**

A single amino acid can determine the DNA binding specificity of homeodomain proteins.

Cell, **59**, 563-562 (1989).

2) Treisman J., **Desplan C.** The *Drosophila* developmental gene products hunchback and Krüppel bind to the promoters of *hunchback*.

Nature, **341**, 335-337 (1989).

3) Ohkuma Y., Horikoshi M., Roeder R., **Desplan C.** Binding site-dependent direct activation and repression of *in vitro* transcription by *Drosophila* homeodomain proteins.

Cell, **61**, 475-484 (1990).

4) Ronchi E, Treisman J., Dostatni N., Struhl G. & **Desplan C.** Down-regulation of the *Drosophila* morphogen Bicoid by the Torso receptor mediated signal transduction cascade.

Cell, **74**, 347-355 (1993).

5) Simpson-Brose M, Treisman J. & **Desplan C.**

Synergy between the Hunchback and Bicoid morphogens is required for anterior patterning in *Drosophila*.

Cell, **78**, 855-865 (1994).

6) Wimmer E., Carleton A., Harjes P., Turner T. & **Desplan C.**

bicoid-independent formation of thoracic segments in *Drosophila*.

Science, **287**, 2476-2479 (2000).

7) Mollereau B., Dominguez M., Webel R., Colley N., Keung B., de Celis J., & **Desplan C.**

Two-step process for photoreceptor formation in *Drosophila*.

Nature, **412**, 911-913 (2001).

8) Wernet M., Labhart T., Baumann F., Mazzoni E., Pichaud F. & **Desplan C.**

homothorax switches function of *Drosophila* photoreceptors from color to polarized light sensors.

Cell, **115**, 267-279 (2003).

- 9) Mikeladze-Dvali T., Wernet M., Pistillo D., Mazzoni E., Teleman A., Chen Y, Cohen S. & **Desplan C.**
The growth regulators Warts/Lats and Melted interact in a bistable loop to specify opposite fates in *Drosophila* R8 photoreceptors.
Cell, **122**, 775-787 (2005).
- 10) Wernet M. F., Mazzoni E. O., Çelik A, Duncan D. M., Duncan I. & **Desplan C.**
Stochastic *spineless* expression creates the retinal mosaic for color vision.
Nature, **440**, 174-180 (2006). Article.
- 11) Lynch J.A., Brent A.E., Leaf D.S., Pultz M.A. & **Desplan C.**
Localized maternal *orthodenticle* patterns anterior and posterior in the long germ wasp *Nasonia*.
Nature, **439**, 728-732 (2006).
- 12) Brent A.E., Yucel G., Small S. & **Desplan C.**
Permissive and instructive anterior patterning functions rely on mRNA localization in the wasp embryo.
Science, **315**, 1841-1843 (2007).
- 13) Losick R. & **Desplan C.** Stochastic choices and cell fate.
Science **320**, 65-68 (2008)
- 14) Sprecher, S, & **Desplan C.**
Switch of *rhodopsin* expression in terminally differentiated *Drosophila* sensory neurons.
Nature **454**, 533-537 (2008). [PMCID: PMC2750042](#)
- 15) Johnston R.J.Jr., Otake Y., Sood P., Vogt N., Behnia R., Vasiliauskas.D, McDonald E., Xie B., Koenig S., Wolf R., Cook T., Gebelein B., Kussell E., Nagakoshi H. & **Desplan C.**
Interlocked feedforward loops control cell-type-specific Rhodopsin expression in the *Drosophila* eye,
Cell **145**, 956-968 (2011). [PMCID: PMC3117217](#)
- 16) Vasiliauskas D., Mazzoni E., Johnston R., Sprecher S., Vogt N., Lidder P. & **Desplan C.**
Feedback from rhodopsin controls *rhodopsin* exclusion in *Drosophila* photoreceptors.
Nature **79**, 108-12 (2011). [PMCID: PMC3208777](#)
- 17) Li X., Erclik T., Bertet C., Chen Z., Voutev R., Venkatesh S., Morante J., Celik A., **Desplan C.**
Temporal patterning of *Drosophila* medulla neuroblasts controls neural fates.
Nature **498**, 456-62 (2013). Article. [PMCID: PMC3701960](#)
- 18) Rosenberg M.I., Brent A.E., Payre F., & **Desplan C.**
Dual mode of embryonic development is highlighted by expression and function of *Nasonia* pair-rule genes
eLife, **3**:e01440 (2014). [PMCID: PMC3941026](#)
- 19) Johnston R.J.Jr. & **Desplan C.**
Interchromosomal communication coordinates intrinsically stochastic expression between alleles
Science **343**:661-5 (2014). [PMCID: PMC4134473](#)
- 20) Bertet C., Li X., Erclik T., Cavey M., Wells B. & **Desplan C.** Temporal patterning of neuroblasts controls Notch-mediated cell survival through regulation of Hid or Reaper.
Cell **158**, 1173–86 (2014) [PMCID: PMC4153738](#)
- 21) Behnia R., Clark D.A., Carter A.G., Clandinin T.R. & **Desplan C.**
Processing properties of ON and OFF pathways for *Drosophila* motion detection
Nature **512**, 427-30 (2014) [PMCID: PMC4243710](#)
- 22) Rister J, Razzaq A, Boodram P, Desai N, Tsanis C, Chen H, Jukam D, & **Desplan C.**
Single base pair differences in a shared regulatory element determine differential rhodopsin expression
Science **350**, 1258-61 (2015). [PMCID: PMC4919384](#)
- 23) Perry M, Kinoshita M, Saldi G., Huo L, Arikawa K. & **Desplan C.**
Improved color vision in butterflies: molecular logic behind three way stochastic choices.
Nature **535**, 280–284 (2016). [PMCID: PMC4988338](#)
- 24) Erclik T, Li X, Courgeon M, Bertet C, Chen ZC, Baumert R, Ng J, Koo C, Arain U, Behnia R, DelValle-Rodriguez A, Senderowicz L, Negre N, White K. & **Desplan C.**
Selective integration of spatial and temporal inputs generates neural diversity in the *Drosophila* medulla.
Nature **541**, 365-370 Article (2017). [PMCID: PMC5489111](#)

25) Yan H., Opachaloemphan C., Mancini G., Yang H, Gallitto M., Mlejnek J., Haight K., Ghaninia M., Huo L., Leibholz A., Slone J., Zhou X., Traficante M., Penick C.A., Dolezal K., Gokhale K., Stevens K., Fetter-Pruneda I., Bonasio R., Zwiebel L.J., Berger S., Liebig J., Reinberg D., and **Desplan C.**
An engineered *orco* mutation in ants produces aberrant social behavior and defective neural development.
Cell **170**, 736–747 (2017). [PMCID: PMC5587193](#)

26) Wells BS, Pistillo D, Barnhart E, & **Desplan C.**
Parallel activin and BMP signaling coordinates R7/R8 photoreceptor subtype pairing in the stochastic *Drosophila* retina.
eLife Aug 30;6. pii: e25301. doi: 10.7554/eLife.25301 (2017). [PMCID: PMC5599232](#)

27) Fernandes V.M, Chen Z., Rossi A.M., Zipfel J., and **Desplan C.**
Glia relay differentiation cues to coordinate neuronal development in *Drosophila*
Science **357**, 886-891 Article (2017) [PMCID: PMC5835562](#)

28) Pinto-Teixeira F, Koo C, Rossi A, Neriec N, Bertet C, DelValle Rodriguez A, and **Desplan C.**
Development of concurrent retinotopic maps in the fly motion detection circuit.
Cell **173**, 485-498 (2018). [PMCID: PMC5889347](#)

29) Konstantinides N., Kapuralin K., Fadil C., Barboza L., Satija R., and **Desplan C.**
Phenotypic convergence in the brain: distinct transcription factors regulate common terminal neuronal characters.
Cell **174**, 622-635 (2018). [PMCID: PMC6082168](#)

30) Holguera I., and **Desplan C.**
Neuronal specification in space and time.
Science **362**,176-180 (2018). [PMCID: PMC6368964](#)

31) Courceon M., and **Desplan C.**
Coordination between stochastic and deterministic specification in the *Drosophila* visual system
Science **366**, 1-11, doi: 10.1126/science.aay6727.2019 [PMCID: PMC6819959](#)

Complete List of Published Work: <http://www.ncbi.nlm.nih.gov/pubmed/?term=desplan+c>

Google Scholars: Published papers:	235
Average Citations/paper (ISI):	43
Citation indices:	<i>All</i> <i>Since 2015</i>
Citations:	13,706 3,991
h-index:	63 35
i10-index:	151 98

D. Research Support

Ongoing Research Support

- NIH R01 EY017916 PI: Claude Desplan 2/2007 – 1/2020

Mechanisms of neural patterning and the generation of neural diversity in the brain

Investigates how temporal and spatial patterning of neuroblasts generate neural diversity.

- NIH R01 EY13010 PI: Claude Desplan 9/1999 – 9/2020

Coordination between patterning of brain regions

How do stochastic choices and spontaneous activity in the retina coordinates patterning of the optic lobes?

- NIH R01 EY13012 PI: Claude Desplan 9/1999 – 9/2020

Circuit formation in the visual centers.

Investigate how neurons find their target layers and build retinotopy in the optic lobe.

- NIH R01 AG058762 PIs: Danny Reinberg & Claude Desplan 9/2018 – 8/2023

Aging and rejuvenation: An ant model to study the regulation of longevity

- NYS DoH NYSTEM IIRP00399 PIs: Claude Desplan & Rahul Satija 08/2018–7/2021

From stem cells to differentiated neurons: A single cell transcriptional approach

- NYU Abu Dhabi Multi PI 3/2012 – 8/2022

NYU Abu Dhabi provides students from over 110 nationalities with a merit-based free American undergraduate education. This grant supports the Center for Genomics and Systems Biology to help local NYU Abu Dhabi faculty develop their research. The money has to be spent exclusively in Abu Dhabi.