

Curriculum Vitae

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Birthdate: November 22, 1957 in Misiones, Argentina

Professional Interests

Structural virology, study of macromolecular assemblies, mechanistic biology, membrane fusion.

Education and Degrees.

Doctorat de l'Université de Paris XI (Orsay), 1988. Biochemistry.

D.E.A. de Biochimie (master's degree) de l'Université de Paris XI (Orsay). 1984. Biochemistry

"Licenciatura" (Master's degree) Instituto Balseiro, Bariloche, Argentina. 1981. Theoretical Physics.

Professional Experience and Positions.

- 1983-1988** Pre-doctoral Fellow with Prof. Joël Janin, University of Paris-Sud, France.
- 1988-1995** Post-doctoral Fellow with Prof. Stephen C. Harrison, Harvard University, Boston USA.
- 1995-1999** Group Leader, CNRS "Laboratoire d'Enzymologie et Biochimie Structurales" Gif-sur-Yvette, France.
- 1999-2004** Director. Structural Molecular Virology Laboratory, CNRS/INRA, Gif-sur-Yvette, France.
- 2004-Present** Director, Virology Department, Institut Pasteur, Paris.
- 2005-Present** Director, Structural Virology Unit, Institut Pasteur, Paris.
- 2007-Present** Director, CNRS URA 3015, Institut Pasteur, Paris.

Awards/Honors:

"Médaille d'argent" (CNRS award, 2004).
EMBO member (elected in 2005)
"Chaire Professorale Serono" (in 2006)
Academia Europaea (elected in 2008)
Prix Duquesne (scientific prize, October 2008)
European Academy of Microbiology (member since 2009)
French Academy of Sciences (elected in 2010)

LIST OF PUBLICATIONS

1. **Rey FA** and Sundquist WI Macromolecular assemblages. *Curr Opin Struct Biol.* 2011 Apr;21(2):221-2. Epub 2011 Mar 16.
2. **Rey FA.** Virology: One protein, many functions. *Nature* 468:773-775 (N&V) (2010)
3. Backovic M, Dubois RM, Cockburn JJ, Sharff AJ, Vaney MC, Granzow H, Klupp BG, Bricogne G, Mettenleiter TC, **Rey FA.** *Structure of a core fragment of glycoprotein H from pseudorabies virus in complex with antibody.* *Proc Natl Acad Sci U S A.* 107: 22635-22640 (2010)
4. Voss JE, Vaney MC, Duquerroy S, Vornrhein C, Girard-Blanc C, Crublet E, Thompson A, Bricogne G, **Rey FA** *Glycoprotein organization of Chikungunya virus particles revealed by X-ray crystallography.* *Nature* 468:709-12 (2010)
5. Agirre J, Aloria K, Arizmendi JM, Iloro I, Elortza F, Sánchez-Eugenia R, Marti GA, Neumann E, **Rey FA,** Guérin DM. *Capsid protein identification and analysis of mature Triatoma virus (TrV) virions and naturally occurring empty particles.* *Virology.*;409:91-101 (2011) Epub 2010 Oct 27
6. Gianni T, Cerretani A, Dubois R, Salvioli S, Blystone SS, **Rey F,** Campadelli-Fiume G. *Herpes simplex virus glycoproteins H/L bind to cells independently of $\alpha V\beta 3$ integrin and inhibit virus entry, and their constitutive expression restricts infection.* *J Virol.* 2010 Apr;84:4013-4025. Epub 2010 Feb 10.
7. Beltramello M, Williams KL, Simmons CP, Macagno A, Simonelli L, Quyen NT, Sukupolvi-Petty S, Navarro-Sanchez E, Young PR, de Silva AM, **Rey FA,** Varani L, Whitehead SS, Diamond MS, Harris E, Lanzavecchia A, Sallusto F. *The human immune response to Dengue virus is dominated by highly cross-reactive antibodies endowed with neutralizing and enhancing activity.* *Cell Host Microbe.*;8:271-283 (2010).
8. Harrus D, Ahmed-El-Sayed N, Simister PC, Miller S, Triconnet M, Hagedorn CH, Mahias K, **Rey FA,** Astier-Gin T, Bressanelli S. *Further insights into the roles of GTP and the C terminus of the hepatitis C virus polymerase in the initiation of RNA synthesis.* *J Biol Chem.* 285:32906-32918 (2010)
9. Krey T, d'Alayer J, Kikuti CM, Saulnier A, Damier-Piolle L, Petitpas I, Johansson DX, Tawar RG, Baron B, Robert B, England P, Persson MAA, Martin A and **Rey FA.** *The Disulfide Bonds in Glycoprotein E2 of Hepatitis C Virus Reveal the Tertiary Organization of the Molecule* *PLoS Pathogens* *PLoS Pathog.* Feb 19;6(2):e1000762 (2010)
10. Backovic M, Johansson DX, Klupp BG, Mettenleiter TC, Persson MA, **Rey FA.** *Efficient method for production of high yields of Fab fragments in Drosophila S2 cells.* *Protein Eng Des Sel.* Jan [Epub ahead of print]PMID: 20100703 (2010)
11. Coulibaly F, Chevalier C, Delmas B, **Rey FA.** *Crystal structure of an Aquabirnavirus particle: insights into antigenic diversity and virulence determinism.* *J Virol.* Feb;84(4):1792-9. (2010)
12. Tawar RG, Duquerroy S, Vornrhein C, Varela PF, Damier-Piolle L, Castagné N, MacLellan K, Bedouelle H, Bricogne G, Bhella D, Eléouët JF, **Rey FA** *Crystal structure of a nucleocapsid-like nucleoprotein-RNA complex of respiratory syncytial virus.* *Science.* Nov 27;326(5957):1279-83.PMID: 19965480 (2009)
13. **Rey FA.** Single-particle cryoEM reconstructions: Meeting the challenge. *Proc Natl Acad Sci U S A.* 2009 Jun 30;106(26):10398-9. Epub 2009 Jun 24.
14. Duquerroy S, Da Costa B, Henry C, Vigouroux A, Libersou S, Lepault J, Navaza J, Delmas B, **Rey FA.** The picobirnavirus crystal structure provides functional insights into virion assembly and cell entry. *EMBO J.* 28:1655-1665 (2009)
15. **Rey FA,** Saibil H. *Macromolecular assemblies* *Curr Opin Struct Biol.* 19:178-180 (2009)
16. Kwan WH, Navarro-Sanchez E, Dumortier H, Decossas M, Vachon H, Dos Santos FB, Fridman HW, **Rey FA,** Harris E, Despres P, Mueller CG *Dermal-Type Macrophages Expressing*

CD209/DC-SIGN Show Inherent Resistance to Dengue Virus Growth. PLoS Negl Trop Dis. **2**:e311. (2008)

17. Bartonova V, Igonet S, Sticht J, Glass B, Habermann A, Vaney MC, Sehr P, Lewis J, **Rey FA**, Krausslich HG *Residues in the HIV-1 capsid assembly inhibitor binding site are essential for maintaining the assembly competent quaternary structure of the capsid protein.* J Biol Chem. 2008 Sep 4. (2008)
18. Estrozi LF, Neumann E, Squires G, Rozas-Dennis G, Costabel M, **Rey FA**, Guérin DM, Navaza J. *Phasing of the Triatoma virus diffraction data using a cryo-electron microscopy reconstruction.* Virology **375**:85-93(2008)
19. Letzel T, Coulibaly F, **Rey FA**, Delmas B, Jagt E, van Loon AAMW and Mundt E. *Molecular and structural bases for the antigenicity of VP2 of infectious bursal disease virus.* J Virol. **81**:12827-12835. (2007)
20. **Rey FA.** *Virology: holed up in a natural crystal.* Nature 446:35-37. (2007) (N&V)
21. Duquerroy S, Stura EA, Bressanelli S, Fabiane SM, Vaney MC, Beale D, Hamon M, Casali P, **Rey FA**, Sutton BJ, Taussig MJ. *Crystal Structure of a Human Autoimmune Complex between IgM Rheumatoid Factor RF61 and IgG1 Fc Reveals a Novel Epitope and Evidence for Affinity Maturation.* J Mol Biol. **368**:1321-1331. (2007)
22. Stiasny K, Kossel C, Lepault J, **Rey FA**, Heinz FX. *Characterization of a Structural Intermediate of Flavivirus Membrane Fusion.* PLoS Pathog. 3:e20 (2007)
23. Sourisseau M, Schilte C, Casartelli N, Trouillet C, Guivel-Benhassine F, Rudnicka D, Sol-Foulon N, Le Roux K, Prevost MC, Fsihi H, Frenkiel MP, Blanchet F, Afonso PV, Ceccaldi PE, Ozden S, Gessain A, Schuffenecker I, Verhasselt B, Zamborlini A, Saib A, **Rey FA**, Arenzana-Seisdedos F, Despres P, Michault A, Albert ML, Schwartz O. *Characterization of reemerging chikungunya virus.* PLoS Pathog. 3:e89 (2007).
24. Roche S, **Rey FA**, Gaudin Y, Bressanelli S. *Structure of the prefusion form of the vesicular stomatitis virus glycoprotein G.* Science. **315** 843-848 (2007).
25. Tran TH, Castagné N, Bhella D, Varela PF, Bernard J, Chimonyk S, Berkenkamp S, Benhamo V, Grznarova K, Grosclaude J, Nespoulos C, **Rey FA** and Eléouët JF. *The nine C-terminal amino acids of the respiratory syncytial virus protein P are necessary and sufficient for binding to ribonucleoprotein complexes in which six ribonucleotides are contacted per N protein protomer.* J. Gen. Virol. 88:196-206. (2007)
26. **Rey FA.** *Molecular Gymnastics at the herpes virus surface.* EMBO Reports 7: 1000-1005 (Review Article) (2006).
27. Roche S, Bressanelli S, **Rey FA** and Gaudin Y. *Crystal structure of the low-pH form of the vesicular stomatitis virus glycoprotein G* Science **313**:187-191 (2006)
28. Schuffenecker I, Iteman I, Michault A, Murri S, Frangeul L, Vaney MC, Lavenir R, Pardigon N, Reynes JM, Pettinelli F, Biscornet L, Diancourt L, Michel S, Duquerroy S, Guigon G, Frenkiel MP, Brehin AC, Cubito N, Despres P, Kunst F, **Rey FA**, Zeller H, Brisse S. *Genome Microevolution of Chikungunya Viruses Causing the Indian Ocean Outbreak.* PLoS Med May 23; **3**:e263 . (2006)
29. Roussel A, Lescar J, Vaney MC, Wengler G, Wengler G, and **Rey FA.** *Structure and Interactions at the Viral Surface of the Envelope Protein E1 of Semliki Forest Virus* Structure **14**:75-86 (2006)
30. Kielian, M and **Rey, FA.** *Virus membrane fusion proteins: more than one way to make a hairpin.* Nature Reviews in Microbiology **4**:67-76. (Review article) (2006)
31. Renard M, Varela PF, Letzelter C, Duquerroy S, **Rey FA**, Heidmann T. *Crystal structure of a pivotal domain of human syncytin-2, a 40 million years old endogenous retrovirus fusogenic envelope gene captured by primates.* J Mol Biol **352**:1029-1034 (2005).
32. Ternois F, Sticht J, Duquerroy S, Krausslich HG, **Rey FA.** *The HIV-1 capsid protein C-terminal domain in complex with a virus assembly inhibitor.* Nat Struct Mol Biol. 2005 **12**:678-682. (2005)
33. Lozach PY, Burleigh L, Staropoli I, Navarro-Sanchez E, Harriague J, Virelizier JL, **Rey FA**, Despres P, Arenzana-Seisdedos F, Amara A. *Dendritic cell-specific intercellular adhesion*

molecule 3-grabbing non-integrin (DC-SIGN)-mediated enhancement of dengue virus infection is independent of DC-SIGN internalization signals. J Biol Chem. **280**: 23698-23708 (2005)

34. Coulibaly F, Chevalier C, Gutsche I, Pous J, Navaza J, Bressanelli S, Delmas B and **Rey, FA**. *The birnavirus crystal structure reveals new structural relationships among icosahedral viruses* Cell, **120**:761-772 (2005)
35. Duquerroy S, Bressanelli S, Rottier PJM, **Rey FA** and Bosch BJ. *Central ions and lateral asparagine/glutamine zippers stabilize the post -fusion hairpin conformation of the SARS coronavirus spike glycoprotein.* Virology **335**:276-285 (2005)
36. Rozas-Dennis G, Squires G, Pous J, Costabel MD, Lepault J, Navaza J, **Rey, FA**. and Guerin DMA. *Purification, crystallization and preliminary X-ray analysis of Triatoma Virus (TrV) from Triatoma infestans* Acta Cryst. **D60**,1647-1650 (2004)
37. Gibbons DL, Vaney MC, Roussel A, Vigouroux A, Reilly B, Lepault J, Kielian M and **Rey FA**. *Conformational change and protein-protein interactions of the fusion protein of Semliki Forest virus.* Nature **427**, 320-325 (2004)
38. Bressanelli S, Stiasny K, Allison SL, Stura EA, Duquerroy S, Heinz FX and **Rey FA**. *Structure of a flavivirus envelope glycoprotein in its low-pH-induced membrane fusion conformation.* EMBO J. **23**:728-738 (2004)
39. Stiasny K, Bressanelli S, Lepault J, **Rey FA** and Heinz FX. *Characterization of a membrane-associated trimeric form of the class II viral fusion protein E from tick-borne encephalitis.* J. Virol. **78**:3178-3183 (2004)
40. Gibbons DL, Reilly B, Ahn A, Vaney MC, Vigouroux A, **Rey FA** and Kielian M. *Purification and crystallization reveal two types of interactions of the fusion protein homotrimer of Semliki Forest virus.* J. Virol. **78**:3514-3523 (2004)
41. Penin F, Dubuisson J, **Rey FA**, Moradpour D and Pawlotsky JM. *Structural Biology of Hepatitis C Virus.* Hepatology **39**: 1-19 (2004)
42. Gibbons DL, Erk I, Reilly B, Navaza J, Kielian M, **Rey FA**, Lepault J. *Visualization of the target-membrane-inserted fusion protein of Semliki Forest virus by combined electron microscopy and crystallography.* Cell. **114**: 573-583 (2003).
43. **Rey, F.A.** *Dengue virus envelope glycoprotein structure: New insights into its interactions during viral entry.* (Comment) Proc Natl Acad Sci U S A **100**, 6899-6901 (2003)
44. Erk I., Huet JC, Duarte M., Duquerroy S, **Rey F.**, Cohen J., Lepault J. *A zinc ion controls assembly and stability of the major capsid protein of rotavirus.* J. Virol **77**: 3595-3601 (2003).
45. Dos Santos CN, Rocha CF, Cordeiro M, Fragoso S, **Rey F**, Deubel V, Despres P. *Genome analysis of dengue type-1 virus isolated between 1990 and 2001 in Brazil reveals a remarkable conservation of the structural proteins but amino acid differences in the non-structural proteins* Virus Res. **90**:197-205 (2002).
46. Stura EA, Taussig MJ, Sutton BJ, Duquerroy S, Bressanelli S, Minson AC, **Rey FA**. *Scaffolds for protein crystallisation.* Acta Cryst. **D58**:1715-1721 (2002).
47. Navaza J, Lepault J, **Rey FA**, Alvarez-Rua C, Borge J. (2002) *On the fitting of model electron densities into EM reconstructions: a reciprocal-space formulation.* Acta Cryst. **D58**:1820-1825.
48. Charpilienne A, Lepault J, **Rey F**, Cohen J. *Identification of rotavirus VP6 residues located at the interface with VP2 that are essential for capsid assembly and transcriptase activity.* J. Virol. **76**:7822-7831 (2002).
49. Bressanelli S, Tomei L, **Rey FA**, De Francesco R. (2002) *Structural analysis of the hepatitis C virus RNA polymerase in complex with ribonucleotides* J Virol. **76**:3482-3492.
50. Lescar, J., Roussel, A., Wien, M. W., Navaza, J., Fuller, S. D., Wengler, G., and **Rey, F. A.**, *The Fusion Glycoprotein Shell of Semliki Forest Virus. An Icosahedral Assembly Primed for Fusogenic Activation at Endosomal pH,* Cell, **105**, 137-148. (2001).
51. Mathieu, M., Petitpas, I., Navaza, J., Lepault, J., Kohli, E., Pothier, P., Prasad, B. V., Cohen, J., and **Rey, F. A.**, *Atomic structure of the major capsid protein of rotavirus: implications for the architecture of the virion,* EMBO J, **20**, 1485-1497. (2001).

52. Lepault, J., Petitpas, I., Erk, I., Navaza, J., Bigot, D., Dona, M., Vachette, P., Cohen, J., and **Rey, F. A.**, *Structural polymorphism of the major capsid protein of rotavirus*, EMBO J, **20**, 1498-1507. (2001).
53. Ferlenghi, I., Clarke, M., Ruttan, T., Allison, S. L., Schalich, J., Heinz, F. X., Harrison, S. C., **Rey, F. A.**, and Fuller, S. D., *Molecular Organization of a Recombinant Subviral Particle from Tick-Borne Encephalitis Virus*, Molecular Cell, **7**, 593-602 (2001).
54. Thouvenin, E., Schoehn, G., **Rey, F.**, Petitpas, I., Mathieu, M., Vaney, M. C., Cohen, J., Kohli, E., Pothier, P., and Hewat, E., *Antibody inhibition of the transcriptase activity of the rotavirus DLP: a structural view*, J Mol Biol, **307**, 161-72. (2001).
55. Duarte dos Santos, C. N., Frenkiel, M. P., Courageot, M. P., Rocha, C. F., Vazeille-Falcoz, M. C., Wien, M. W., **Rey, F. A.**, Deubel, V., and Despres, P., *Determinants in the envelope E protein and viral RNA helicase NS3 that influence the induction of apoptosis in response to infection with dengue type 1 virus*, Virology, **274**, 292-308. (2000).
56. Bressanelli, S., Tomei, L., Roussel, A., Incitti, I., Vitale, R. L., Mathieu, M., De Francesco, R., and **Rey, F. A.**, *Crystal structure of the RNA-dependent RNA polymerase of hepatitis C virus*, Proc Natl Acad Sci U S A, **96**, 13034-9. (1999).
57. Flamand, M., Megret, F., Mathieu, M., Lepault, J., **Rey, F. A.**, and Deubel, V., *Dengue virus type 1 nonstructural glycoprotein NS1 is secreted from mammalian cells as a soluble hexamer in a glycosylation-dependent fashion*, J Virol, **73**, 6104-10. (1999).
58. Wengler, G., Wengler G. And **Rey, F.A.** *The isolation of the ectodomain of the alphavirus E1 glycoprotein as a soluble hemagglutinin and its crystallization*. Virology **257** : 472-482 (1999)
59. Petitpas, I., Lepault J., Vachette P., Charpilienne A., Mathieu M., Kohli E., Pothier P., Cohen J. and **Rey, F.A.** *Crystallization and preliminary X-ray analysis of rotavirus protein VP6* J. Virol. **72** :7615-7619 (1998)
60. Muller, C. W., **Rey F. A.**, And S. C. Harrison. *Comparison of two different DNA-binding modes of the NF-kappa B p50 homodimer*. Nature Structural Biology **3**:224-227. (1996)
61. **Rey, F. A.**, Heinz F. X., Mandl C., Kunz C., And S. C. Harrison. *The envelope glycoprotein from tick-borne encephalitis virus at 2 A resolution*. Nature. **375**:291-298 (1995)
62. Muller, C. W., **Rey F. A.**, Sodeoka M., Verdine G. L., And S. C. Harrison. *Structure of the NF-kappa B p50 homodimer bound to DNA*. Nature. **373**:311-317. (1995)
63. Jenkins J, Janin J, **Rey FA**, Chiadmi M, Van Tilbeurg H, Lasters I, De Maeyer M, Van Belle D, Wodak SJ, Lauwereys M, Stanssens P, Mrabet NT, Snauwaert J, Matthyssens G and Lambeir AM *Protein Engineering of Xylose (glucose) Isomerase from Actinoplanes Missouriensis. 1. Crystallography and Site-Directed Mutagenesis of Metal Binding Sites* Biochemistry **31**, 5449-5458, (1992)
64. Mrabet NT, Van den Broeck A, Van den Brande I, Stanssens P, Laroche Y., Lambeir AM, Matthyssens G, Jenkins J, Chiadmi M, Van Tilbeurg H, **Rey FA**, Janin J, Quax WH, Lasters I, De Maeyer M, and Wodak SJ *Arginines as Stabilizing Elements in Proteins*. Biochemistry **31**, 2239,2253 (1992)
65. Heinz FX, Mandl,CW, Holtzmann H, Kunz C, Harris BA, **Rey FA** and Harrison SC *The Flavivirus Envelope Protein E: Isolation of a Soluble Dimeric Form From Tick Borne Encephalitis Virus and its Crystallization*. J. Virol. **65**, 5579-5583 (1991)
66. **Rey FA**, Dumas C. *FFT method to compute solution X-ray scattering curves*. Biochimie. **66**:121-126. (1984)

Book chapter:

- **Rey FA**, Lepault J and Cohen J. *The three-dimensional structure of rotavirus VP6*. In "Viral Gastroenteritis", U. Desselberger and J. Gray, Editors. Perspectives in Medical Virology Series, Vol 9. (Zuckerman and Mushahwar, Series editors) ISBN 0 444 51444 9. Elsevier, Amsterdam. Pages 129-142. 2003

Others:

- **Rey, FA.** (1999) *A dimer of trimers of Rotavirus protein VP6 as a possible intermediate in the assembly of the viral particle.* CR Acad. Agr. Fr. 85 19-21