

ESP Advanced Training Centre for Molecular Pathology with an Emphasis on Liquid Biopsy Nice, France

Name of the center, address	Laboratory of Clinical and Experimental Pathology Liquid Biopsy Laboratory Hôpital Pasteur, Université Côte d'Azur Bâtiment J 30 Voie Romaine 06000 Nice France
Chair of the Center	Prof. Paul Hofman
Email	hofman.p@hu-nice.fr

Details about specific areas in which training can be offered

Molecular Pathology	<p>The Molecular Pathology unit offers a full spectrum of molecular support services, known for their operational excellence and strong academic bent, and provides molecular services to clinicians and other health care-providers within South of France, while also serving as a top-tiered reference laboratory at the regional, national, and international level.</p> <p>The Molecular Pathology unit offers molecular testing for therapeutic decision making, and disease monitoring in lung, melanoma, thyroid and colorectal carcinoma (more than 2000 molecular tests/year).</p> <p>In 2013, the Molecular Pathology unit became the first pathology laboratory in France to get accreditation by the COFRAC (ISO 15189 norm) for pyrosequencing and FISH, and in 2017 the first to get COFRAC accreditation for Next-Generation Sequencing in somatic mutation detection.</p>
Liquid Biopsy Laboratory	<p>The Liquid Biopsy Laboratory (LBL) specializes in the analysis of circulating tumor cells (CTCs) and cell-free DNA/RNA. The LBL is currently a national and international reference for the study of liquid biopsy, where an average volume of 600 blood samples from hospitals and research centers throughout the French and European is analyzed per year (e.g. NCT02372448).</p> <ul style="list-style-type: none">• Molecular testing on cell-free DNA in lung cancer patients: i) cobas® EGFR Mutation Test v2, Roche; ii) therascreen® EGFR Plasma RGQ PCR Kit, Qiagen; iii) Next-Generation Sequencing (Oncomine Lung cfDNA Assay, Thermo Fisher Scientific); iv) Digital PCR System: Naica system™, Stilla technologies; v) Idylla™ EGFR Mutation Assay (Biocartis).• Bench-top solutions for high sensitivity CTC enrichment, recovery and characterization from blood samples, validated using thousands of samples across key solid tumor types, including lung cancer, mesothelioma, and melanoma: i) ISET (Isolation by Size of Epithelial Tumor Cells, Rarecells, Paris, France); CellSearch system (Janssen Diagnostics, LLC Rarita, USA).

Number of positions offered for each year, expected duration of the training:

A minimum of 1 month is required, usually 3 to 6 months. The applicant will receive help to fund a stay superior to 3 months. The department can accommodate 1 position per training slot.

Specific periods of the year when the visit may be realized (should be defined in direct contact):

There is no time restriction, but it is required that the slot is arranged with enough anticipation.

Contact address for requesting details by the applicant: Dr. Marius Ilié, Laboratoire de Pathologie Clinique et Expérimentale, Hôpital Pasteur, Bâtiment J, 30 Voie Romaine, 06000 Nice, France ; email : ilie.m@chu-nice.fr

Accommodation & Documents:

The applicant will receive help to found accommodation for a reasonable local price.

After completion of the training period the trainee will receive a detailed certificate describing the work. A letter of invitation for the applicant can be issued if necessary.

No fee will be raised for the training program. The Department will not fund the accommodation or any fees incurred in visa applications, if required.

Basic knowledge of French is required.

Attachments:

1. Publications of the last 3 years
2. Laboratory Flyer

Attachment 1. Publications of the last 3 years

Publications 2017

1. [The liquid biopsy: a tool for a combined diagnostic and theranostic approach for care of a patient with late-stage lung carcinoma presenting with bilateral ocular metastases.](#) Bouhlef L, Hofman V, Maschi C, Ilié M, Allégra M, Marquette CH, Audigier-Valette C, Thariat J, Hofman P. *Expert Rev Anticancer Ther.* 2017 Nov 2:1-6.
2. [PD-L1 immunohistochemistry for non-small cell lung carcinoma: which strategy should be adopted?](#) Hofman P. *Expert Rev Mol Diagn.* 2017 Nov 1:1-12.
3. [Response to first line chemotherapy regimen is associated with efficacy of nivolumab in non-small-cell lung cancer.](#) Kaderbhai CG, Richard C, Fumet JD, Aarnink A, Ortiz-Cuaran S, Pérol M, Foucher P, Couderet B, Favier L, Lagrange A, Limagne E, Boidot R, Ladoire S, Poudenx M, Ilie M, Hofman P, Saintigny P, Ghiringhelli F. *Oncoimmunology.* 2017 Jun 16;6(9):e1339856.
4. [Training the Next Generation of Biobankers: A Two-Year Master's Course in the Management of Biobanks.](#) Gormally E, Hardy I, Caboux E, di Donato JH, Hainaut P, Hofman P. *Biopreserv Biobank.* 2017 Oct;15(5):438-450.
5. [MiR-223-3p inhibits angiogenesis and promotes resistance to cetuximab in head and neck squamous cell carcinoma.](#) Bozec A, Zangari J, Butori-Pepino M, Ilie M, Lalvee S, Juhel T, Butori C, Brest P, Hofman P, Vouret-Craviari V.
6. [ALK in Non-Small Cell Lung Cancer \(NSCLC\) Pathobiology, Epidemiology, Detection from Tumor Tissue and Algorithm Diagnosis in a Daily Practice.](#) Hofman P. *Cancers (Basel).* 2017 Aug 12;9(8).
7. [ALK Status Assessment with Liquid Biopsies of Lung Cancer Patients.](#) Hofman P. *Cancers (Basel).* 2017 Aug 12;9(8).
8. [Use of the 22C3 anti-PD-L1 antibody to determine PD-L1 expression in multiple automated immunohistochemistry platforms.](#) Ilie M, Khambata-Ford S, Copie-Bergman C, Huang L, Juco J, Hofman V, Hofman P. *PLoS One.* 2017 Aug 10;12(8):e0183023.
9. [RECIST response and variation of circulating tumour cells in phase I trials: A prospective multicentric study.](#) Massard C, Borget I, Farace F, Aspeslagh S, Le Deley MC, Le Tourneau C, Bidard FC, Pierga JY, Dieras V, Hofman P, Spano JP, Ferte C, Lacroix L, Soria JC. *Eur J Cancer.* 2017 Sep;83:185-193.
10. [Immunotherapy supplanting chemotherapy for upfront treatment of advanced non-small cell lung cancer: what's next?](#) Ilie M, Hofman P. *J Thorac Dis.* 2017 May;9(5):E519-E521.
11. [NGS analysis on tumor tissue and cfDNA for genotype-directed therapy in metastatic NSCLC patients. Between hope and hype?](#) Falk AT, Heeke S, Hofman V, Lespinet V, Ribeyre C, Bordone O, Poudenx M, Otto J, Garnier G, Castelnau O, Guigay J, Leroy S, Marquette CH, Hofman P, Ilié M. *Expert Rev Anticancer Ther.* 2017 Aug;17(8):681-685.
12. [Composite biomarkers defined by multiparametric immunofluorescence analysis identify ALK-positive adenocarcinoma as a potential target for immunotherapy.](#) Roussel H, De Guillebon E, Biard L, Mandavit M, Gibault L, Fabre E, Antoine M, Hofman P, Beau-Faller M, Blons H, Danel C, Barthes FLP, Gey A, Granier C, Wislez M, Laurent-Puig P, Oudard S, Bruneval P, Badoual C, Cadranet J, Tartour E. *Oncoimmunology.* 2017 Feb 21;6(4):e1286437.
13. [Inverted conjunctival papilloma: a certainly underestimated high-risk lesion for carcinomatous transformation-a case report.](#) Lassalle S, Maschi C, Caujolle JP, Giordanengo V, Hofman P. *Can J Ophthalmol.* 2017 Feb;52(1):e30-e31.
14. [Expression of MET in circulating tumor cells correlates with expression in tumor tissue from advanced-stage lung cancer patients.](#) Ilie M, Szafer-Glusman E, Hofman V, Long-Mira E, Suttman R, Darbonne W, Butori C, Lalvee S, Fayada J, Selva E, Yu W, Marquette CH, Shames DS, Punnoose E, Hofman P. *Oncotarget.* 2017 Apr 18;8(16):26112-26121.
15. [Pathology of infectious diseases: what does the future hold?](#) Hofman P, Lucas S, Jouvion G, Tauziède-Espariat A, Chrétien F, Cathomas G. *Virchows Arch.* 2017 May;470(5):483-492.
16. [PD1/PD-L1 immunohistochemistry in thoracic oncology: Where are we?](#) Hofman P, Ilié M, Lassalle S, Long E, Bence C, Butori C, Hofman V. *Ann Pathol.* 2017 Feb;37(1):39-45.
17. [Fibronectin-guided migration of carcinoma collectives.](#) Gopal S, Veracini L, Grall D, Butori C, Schaub S, Audebert S, Camoin L, Baudalet E, Radwanska A, Beghelli-de la Forest Divonne S, Violette

- SM, Weinreb PH, Rekima S, Ilie M, Sudaka A, Hofman P, Van Obberghen-Schilling E. *Nat Commun.* 2017 Jan 19;8:14105.
18. [Rapid decay of engulfed extracellular miRNA by XRN1 exonuclease promotes transient epithelial-mesenchymal transition.](#) Zangari J, Ilie M, Rouaud F, Signetti L, Ohanna M, Didier R, Roméo B, Goldoni D, Nottet N, Staedel C, Gal J, Mari B, Mograbi B, Hofman P, Brest P. *Nucleic Acids Res.* 2017 Apr 20;45(7):4131-4141.
 19. [Quality Matters: 2016 Annual Conference of the National Infrastructures for Biobanking.](#) Doucet M, Becker KF, Björkman J, Bonnet J, Clément B, Daidone MG, Duyckaerts C, Erb G, Haslacher H, Hofman P, Huppertz B, Junot C, Lundeberg J, Metspalu A, Lavitrano M, Litton JE, Moore HM, Morente M, Naimi BY, Oelmueller U, Ollier B, Parodi B, Ruan L, Stanta G, Turano P, Vaught J, Watson P, Wichmann HE, Yuille M, Zaomi M, Zatloukal K, Dagher G. *Biopreserv Biobank.* 2017 Jun;15(3):270-276.
 20. [Liquid biopsy for early detection of lung cancer.](#) Hofman P. *Curr Opin Oncol.* 2017 Jan;29(1):73-78.

Publications 2016

1. [p38MAPK builds a hyaluronan cancer niche to drive lung tumorigenesis.](#) Brichkina A, Bertero T, Loh HM, Nguyen NT, Emelyanov A, Rigade S, Ilie M, Hofman P, Gaggioli C, Bulavin DV. *Genes Dev.* 2016 Dec 1;30(23):2623-2636.
2. [Comparative analysis of micro-RNAs in human papillomavirus-positive versus -negative oropharyngeal cancers.](#) Mirghani H, Ugolin N, Ory C, Goislard M, Lefèvre M, Baulande S, Hofman P, Guily JL, Chevillard S, Lacave R. *Head Neck.* 2016 Nov;38(11):1634-1642.
3. [Rebuttal from Dr. Hofman and Dr. Ilie.](#) Ilie M, Hofman P. *Transl Lung Cancer Res.* 2016 Aug;5(4):428-9.
4. [Pros: Can tissue biopsy be replaced by liquid biopsy?](#) Ilie M, Hofman P. *Transl Lung Cancer Res.* 2016 Aug;5(4):420-3.
5. [PD-L1 expression in basaloid squamous cell lung carcinoma: Relationship to PD-1+ and CD8+ tumor-infiltrating T cells and outcome.](#) Ilie M, Falk AT, Butori C, Chamorey E, Bonnetaud C, Long E, Lassalle S, Zahaf K, Vénissac N, Mouroux J, Cohen C, Brambilla E, Marquette CH, Hofman V, Hofman P. *Mod Pathol.* 2016 Dec;29(12):1552-1564.
7. [Pathologists and liquid biopsies: to be or not to be?](#) Hofman P, Popper HH. *Virchows Arch.* 2016 Dec;469(6):601-609.
8. [BCL-B \(BCL2L10\) is overexpressed in patients suffering from multiple myeloma \(MM\) and drives an MM-like disease in transgenic mice.](#) Hamouda MA, Jacquet A, Robert G, Puissant A, Richez V, Cassel R, Fenouille N, Roulland S, Gilleron J, Griessinger E, Dubois A, Bailly-Maitre B, Goncalves D, Mallavialle A, Colosetti P, Marchetti S, Amiot M, Gomez-Bougie P, Rochet N, Deckert M, Avet-Loiseau H, Hofman P, Karsenti JM, Jeandel PY, Blin-Wakkach C, Nadel B, Cluzeau T, Anderson KC, Fuzibet JG, Auberger P, Luciano F. *J Exp Med.* 2016 Aug 22;213(9):1705-22.
9. [A case report of isolated lymphadenopathy revealing localized leishmanial lymphadenopathy in an asthenic 25-year-old man.](#) Hurlot Q, Fillaux J, Laurent C, Berry A, Hofman P, Marchou B, Delobel P, Brousset P, Martin-Blondel G. *Medicine (Baltimore).* 2016 Jul;95(29):e3932.
10. [\[Standard of care of carcinomas on cancer of unknown primary site in 2016\].](#) Benderra MA, Ilie M, Hofman P, Massard C. *Bull Cancer.* 2016 Jul-Aug;103(7-8):697-705.
11. [Compounds Triggering ER Stress Exert Anti-Melanoma Effects and Overcome BRAF Inhibitor Resistance.](#) Cerezo M, Lehraiki A, Millet A, Rouaud F, Plaisant M, Jaune E, Botton T, Ronco C, Abbe P, Amdouni H, Passeron T, Hofman V, Mograbi B, Dabert-Gay AS, Debayle D, Alcor D, Rabhi N, Annicotte JS, Héliot L, Gonzalez-Pisfil M, Robert C, Moréra S, Vigouroux A, Gual P, Ali MMU, Bertolotto C, Hofman P, Ballotti R, Benhida R, Rocchi S. *Cancer Cell.* 2016 Jun 13;29(6):805-819.
12. [Excess sphingomyelin disturbs ATG9A trafficking and autophagosome closure.](#) Corcelle-Termeau E, Vindeløv SD, Hämälistö S, Mograbi B, Keldsbo A, Bräsen JH, Favaro E, Adam D, Szytiarowski P, Hofman P, Krautwald S, Farkas T, Petersen NH, Rohde M, Linkermann A, Jäättelä M. *Autophagy.* 2016 May 3;12(5):833-49.
13. [MicroRNA-375/SEC23A as biomarkers of the in vitro efficacy of vandetanib.](#) Lassalle S, Zangari J, Popa A, Ilie M, Hofman V, Long E, Patey M, Tissier F, Belléannée G, Trouette H, Catargi B, Peyrottes I, Sadoul JL, Bordone O, Bonnetaud C, Butori C, Bozec A, Guevara N, Santini J, Hénouai IS, Lemaire G, Blanck O, Vielh P, Barbry P, Mari B, Brest P, Hofman P. *Oncotarget.* 2016 May 24;7(21):30461-78.

14. [RNA Activation of the Vascular Endothelial Growth Factor Gene \(VEGF\) Promoter by Double-Stranded RNA and Hypoxia: Role of Noncoding VEGF Promoter Transcripts.](#) Lopez P, Wagner KD, Hofman P, Van Obberghen E. Mol Cell Biol. 2016 May 2;36(10):1480-93.
15. [High expression of TRF2, SOX10, and CD10 in circulating tumor microemboli detected in metastatic melanoma patients. A potential impact for the assessment of disease aggressiveness.](#)
16. Long E, Ilie M, Bence C, Butori C, Selva E, Lalvée S, Bonnetaud C, Poissonnet G, Lacour JP, Bahadoran P, Brest P, Gilson E, Ballotti R, Hofman V, Hofman P. Cancer Med. 2016 Jun;5(6):1022-30.
17. [\[Issues and current limits for immunohistochemical assessment of PD-L1 status in bronchial biopsies\].](#) Hofman V, Ilie M, Long E, Butori C, Lassalle S, Washetine K, Lalve S, Marquette CH, Soria JC, Hofman P. Bull Cancer. 2016 Apr;103(4):368-80.
18. [Assessment of the PD-L1 status by immunohistochemistry: challenges and perspectives for therapeutic strategies in lung cancer patients.](#) Ilie M, Hofman V, Dietel M, Soria JC, Hofman P. Virchows Arch. 2016 May;468(5):511-25.
19. [Three Rounds of External Quality Assessment in France to Evaluate the Performance of 28 Platforms for Multiparametric Molecular Testing in Metastatic Colorectal and Non-Small Cell Lung Cancer.](#) Dequeker EM, Keppens C, Egele C, Delen S, Lamy A, Lemoine A, Sabourin JC, Andrieu C, Ligtenberg M, Fétique D, Tops B, Descarpentries C, Blons H, Denoux Y, Aube C, Penault-Llorca F, Hofman P, Leroy K, Le Marechal C, Doucet L, Durantou-Tanneur V, Pedeutour F, Soubeyran I, Côté JF, Emile JF, Vignaud JM, Monhoven N, Haddad V, Laurent-Puig P, van Krieken H, Nowak F, Lonchamp E, Bellocq JP, Rouleau E. J Mol Diagn. 2016 Mar;18(2):205-14.
20. [Western diet induces a shift in microbiota composition enhancing susceptibility to Adherent-Invasive E. coli infection and intestinal inflammation.](#) Agus A, Denizot J, Thévenot J, Martinez-Medina M, Massier S, Sauvanet P, Bernalier-Donadille A, Denis S, Hofman P, Bonnet R, Billard E, Barnich N. Sci Rep. 2016 Jan 8;6:19032.
21. [Detection and characterization of circulating tumor cells in lung cancer: Why and how?](#) Hofman VJ, Ilie M, Hofman PM. Cancer Cytopathol. 2016 Jun;124(6):380-7.
22. [\[KRAS and bronchial adenocarcinoma. Between disappointments and hopes\].](#) Guibert N, Ilie M, Léna H, Didier A, Hofman P, Mazieres J. Rev Mal Respir. 2016 Feb;33(2):156-64.
23. [Head and neck adenoid cystic carcinoma: A prospective multicenter REFCOR study of 95 cases.](#) Meyers M, Granger B, Herman P, Janot F, Garrel R, Fakhry N, Poissonnet G, Baujat B; REFCOR members. Eur Ann Otorhinolaryngol Head Neck Dis. 2016 Feb;133(1):13-7.
24. [Comparative study of the PD-L1 status between surgically resected specimens and matched biopsies of NSCLC patients reveal major discordances: a potential issue for anti-PD-L1 therapeutic strategies.](#) Ilie M, Long-Mira E, Bence C, Butori C, Lassalle S, Bouhlef L, Fazzalari L, Zahaf K, Lalvée S, Washetine K, Mouroux J, Vénissac N, Poudenx M, Otto J, Sabourin JC, Marquette CH, Hofman V, Hofman P. Ann Oncol. 2016 Jan;27(1):147-53.
25. [NF-κB2 induces senescence bypass in melanoma via a direct transcriptional activation of EZH2.](#) De Donatis GM, Pape EL, Pierron A, Cheli Y, Hofman V, Hofman P, Allegra M, Zahaf K, Bahadoran P, Rocchi S, Bertolotto C, Ballotti R, Passeron T. Oncogene. 2016 May;35(21):2735-45.
26. [Sense and nonsense in the process of accreditation of a pathology laboratory.](#) Long-Mira E, Washetine K, Hofman P. Virchows Arch. 2016 Jan;468(1):43-9.

Publications 2015

1. [\[Search for circulating tumor cells: Seriously, a real cancer screening tool?\].](#) Hofman P. J Mal Vasc. 2015 Dec;40(6):335-7.
2. [Autophagy : Moving Benchside Promises to Patient Bedsides.](#) Belaid A, Ndiaye PD, Filippakis H, Roux J, Röttinger É, Graba Y, Brest P, Hofman P, Mograbi B. Curr Cancer Drug Targets. 2015;15(8):684-702.
3. [Why and how immunohistochemistry should now be used to screen for the BRAFV600E status in metastatic melanoma? The experience of a single institution \(LCEP, Nice, France\).](#) Long E, Ilie M, Lassalle S, Butori C, Poissonnet G, Washetine K, Mouroux J, Lespinet V, Lacour JP, Taly V, Laurent-Puig P, Bahadoran P, Hofman V, Hofman P. J Eur Acad Dermatol Venereol. 2015 Dec;29(12):2436-43.
4. [Stratification of resectable lung adenocarcinoma by molecular and pathological risk estimators.](#) Rakha E, Pajares MJ, Ilie M, Pio R, Echeveste J, Hughes E, Soomro I, Long E, Idoate MA, Wagner S, Lanchbury JS, Baldwin DR, Hofman P, Montuenga LM. Eur J Cancer. 2015 Sep;51(14):1897-903.

5. [Reply to the letter to the editor 'ALK FISH rearranged and amplified tumor with negative immunohistochemistry: a rare and challenging case concerning ALK status screening in lung cancer' by Uguen et al.](#) Ilie M, Hofman P. *Ann Oncol.* 2015 Aug;26(8):1802.
6. [KRAS Mutations in Lung Adenocarcinoma: Molecular and Epidemiological Characteristics, Methods for Detection, and Therapeutic Strategy Perspectives.](#) Guibert N, Ilie M, Long E, Hofman V, Bouhlel L, Brest P, Mograbi B, Marquette CH, Didier A, Mazieres J, Hofman P. *Curr Mol Med.* 2015;15(5):418-32.
7. [French multicentric validation of ALK rearrangement diagnostic in 547 lung adenocarcinomas.](#) Lantuejoul S, Rouquette I, Blons H, Le Stang N, Ilie M, Begueret H, Grégoire V, Hofman P, Gros A, Garcia S, Monhoven N, Devouassoux-Shisheboran M, Mansuet-Lupo A, Thivolet F, Antoine M, Vignaud JM, Penault-Llorca F, Galateau-Sallé F, McLeer-Florin A. *Eur Respir J.* 2015 Jul;46(1):207-18.
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10. [Immunohistochemistry as a potential tool for routine detection of the NRAS Q61R mutation in patients with metastatic melanoma.](#) Ilie M, Long-Mira E, Funck-Brentano E, Lassalle S, Butori C, Lespinet-Fabre V, Bordone O, Gay A, Zahaf K, Poissonnet G, Lacour JP, Bahadoran P, Ballotti R, Gros A, Dutriaux C, Saiag P, Merlio JP, Vergier B, Emile JF, Hofman V, Hofman P. *J Am Acad Dermatol.* 2015 May;72(5):786-93.
11. [Intraclonal heterogeneity in tumors and its impact on precision medicine\].](#) Roux J, Gouzé JL, Hofman P. *Med Sci (Paris).* 2015 Jan;31(1):28-31.
12. [Genetic and pharmacological inactivation of the purinergic P2RX7 receptor dampens inflammation but increases tumor incidence in a mouse model of colitis-associated cancer.](#) Hofman P, Cherfils-Vicini J, Bazin M, Ilie M, Juhel T, Hébuterne X, Gilson E, Schmid-Alliana A, Boyer O, Adriouch S, Vouret-Craviari V. *Cancer Res.* 2015 Mar 1;75(5):835-45.
13. [Role of frozen section analysis in nodular thyroid pathology.](#) Guevara N, Lassalle S, Benaim G, Sadoul JL, Santini J, Hofman P. *Eur Ann Otorhinolaryngol Head Neck Dis.* 2015 Apr;132(2):67-70.
14. [Setting up a wide panel of patient-derived tumor xenografts of non-small cell lung cancer by improving the preanalytical steps.](#) Ilie M, Nunes M, Blot L, Hofman V, Long-Mira E, Butori C, Selva E, Merino-Trigo A, Vénissac N, Mouroux J, Vrignaud P, Hofman P. *Cancer Med.* 2015 Feb;4(2):201-11.
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16. [Tissue inhibitor of metalloproteinases-1 induces a pro-tumorigenic increase of miR-210 in lung adenocarcinoma cells and their exosomes.](#) Cui H, Seubert B, Stahl E, Dietz H, Reuning U, Moreno-Leon L, Ilie M, Hofman P, Nagase H, Mari B, Krüger A. *Oncogene.* 2015 Jul;34(28):3640-50.
17. [Diet-induced hypoxia responsive element demethylation increases CEACAM6 expression, favouring Crohn's disease-associated Escherichia coli colonisation.](#) Denizot J, Desrichard A, Agus A, Uhrhammer N, Dreux N, Vouret-Craviari V, Hofman P, Darfeuille-Michaud A, Barnich N. *Gut.* 2015 Mar;64(3):428-37.