

CV for: **Claus Moser**, Senior registrar, Ph.D. at Department for Clinical Microbiology (DCM), Rigshospitalet. External associate professor at Institute for Microbiology and Immunology, University of Copenhagen

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Born: 23rd of August 1963

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Education:
1993 Medical exam, University of Copenhagen
1999 Ph.D, University of Copenhagen
2005 Specialized in Clinical Microbiology.

Employments:
1993-94 Internship, Frederikssund Sygehus and medical center, Skibby
1994-95 Registrar, DCM, Rigshospitalet
1995-99 Research fellow, DCM, Rigshospitalet
1999-2002 Registrar, DCM, Rigshospitalet, Hematological department, Rigshospitalet, Department for Epidemic diseases, Rigshospitalet
2002-04 Registrar, Statens Seruminstitut
2004-> Senior registrar, DCM, Rigshospitalet
2013-14 Consultant temporarily appointed, DCM, Rigshospitalet

Recent major fundings:
2009-11 ABT fonden, 15 mill. kroner (3,75 mill in kind contribution). With Teknologisk Institut and University of Aalborg.
2014-17 Forsknings- og Innovationsstyrelsen, 30 mill. kr. BIOFORS (ten institutions and companies including DCM, Rigshospitalet).
2017-22 Novo Nordisk Foundation, Borregaard legatet. 5 mill. kroner. Biofilm infections: Worst "film" ever? From microbial aggregation and biofilm infection to improved outcome.

Scientific qualifications:
Host response, diagnosing and treatment of biofilm infections. Optimization of antibiotic treatment. Several animal models established. Molecular diagnostics.

2016 Assessed qualified for the Clinical Professorship of Clinical Microbiology with special focus on Persistent Airway Infections.

Management experience and qualifications:
Steering committee of the POET study (Partial Oral Endocarditis Treatment (nationwide randomized, controlled clinical study). Steering committee of ABT grant and the BIOFORS project.
2009 assembly leader in the Scientific Committee of European Society for Cystic Fibrosis (member 2008-10).
Chairman of the infectious endocarditis working group, DSKM. Scientific Secretary at the international symposium: Basic and Clinical Research of Chronic *Pseudomonas aeruginosa* lung infection in Cystic Fibrosis and Diffuse Panbronchiolitis – East meets West 1999.
Member of local organizing committee for European Cystic Fibrosis Conference, Copenhagen 2006, and for Eurobiofilms, Copenhagen 2011.
Two courses in leadership of professionals (OLAU and The Capital Region).
Reviewer for several international scientific journals. National Editor for APMIS.

Organizations:
Member of Dansk Selskab for Klinisk Mikrobiologi (DSKM), European Cystic Fibrosis Society (ECFS), American Society for Microbiology (ASM), European Society of Clinical Microbiology and Infectious Diseases (ESCMID).

Supervision experience:
1999-present: Previously: 8 PhD projects. Currently: 2 PhD students. Supervised several bachelor and master thesis.

Awards and Honors:
1991: Winner "Fru Astrid Thaysens Prisopgave for Lægevidenskabelig Grundforskning – prisopgave": "Breastcancer biology and/or therapy". Written with John Rømer and Claus Holst-Hansen

Publications:
Peer-reviewed publications: 133 publications and book chapters (>60 original papers, 16 reviews and 5 book chapters within CF or biofilm infections). >30 oral presentations and >200 abstracts at international conferences. Chairman and abstract and poster award reviewer at several ECFS conferences.

Citations: 6,506 (Google scholar). **H-index:** 39 (Google scholar).

PUBLICATION LIST for Claus Moser

Original publications

1. Nils Br  nner, Claus Moser, Robert Clarke and Kevin Cullen. IGF-I and IGF-II expression in human breast xenografts: Relationship to hormone independence. *Breast Cancer Research and Treatment* 22: 39-45, 1992.
2. Niels H  iby, Helle Krogh Johansen, Jens Otto Jarl  v, Henrik Westh, J  rgen B Prag, Jette M Bangsborg, Claus Moser, Michael Kemp, Allan K Hornsleth, Hanne Hansen. Ciprofloxacin in sweat and antibiotic resistance. *The Lancet* 346: 1235, 1995.
3. Mette R Clausen, Christian N Meyer, Torben Krantz, Claus Moser, Grethe Gomme, Lars Kayser, Jens Albrechtsen, Christian M O Kapel, Ib C Bygbjerg. *Trichinella* infection and clinical disease. *Quarterly Journal of Medicine*. 89: 631-636, 1996.
4. Zhijung Song, Helle Krogh Johansen, Claus Moser and Niels H  iby. Effects of Chinese medicinal herbs on a rat model of chronic *Pseudomonas aeruginosa* lung infection. *APMIS* 104: 350-354, 1996.
5. Moser C., H. K. Johansen, Z. Song, H. P. Hougen, J. Rygaard and N. H  iby. Chronic *Pseudomonas aeruginosa* lung infection is more severe in Th2 responding BALB/c mice compared to Th1 responding C3H/HeN mice. *APMIS* 105: 838-42, 1997.
6. Song Z., H. K. Johansen, V. Faber, C. Moser, A. Kharazmi and N. H  iby. Ginseng treatment reduces bacterial load and lung pathology in chronic *P. aeruginosa* pneumonia in rats. *Antimicrobial Agents and Chemotherapy* 1997; 41: 961-964.
7. Moser C., J  nsson V., Thomsen K., Albrechtsen J., Hansen M. M., Prag J. Subcutaneous lesions in three leukaemic patients with neutropenia and *Stenotrophomonas maltophilia* bacteraemia. *British Journal of Dermatology* 136: 949-952, 1997.
8. Johansen H. K., Cryz Jr. S. J., Hougen H. P., Moser C. and H  iby N. Vaccination promotes Th1-like inflammation and survival in chronic *Pseudomonas aeruginosa* pneumonia. A new prophylactic principle. *Behring Institute Mitteilungen* 1997; 98: 269-273.
9. Klaus Edvardsen, Elisabeth Bock, Stana Jirus, Thomas Leth Frandsen, Claus Holst-Hansen, Claus Moser, Mogens Spang-Thomsen, Nina Pedersen, Frank S. Walsh, Lars L. Vindel  v, and Niels Br  nner. Effect of NCAM-transfection on growth and invasion of a human cancer cell line. *APMIS* 1997. 105:919-930.
10. Moser C., Kriegbaum NJ., Larsen SO., H  iby N., Biering-S  rensen F. Antibodies to urinary tract pathogens in patients with spinal cord lesions. *Spinal Cord* 1998; 36: 613-616.
11. Song Z., Johansen HK., Faber V., Moser C., Kharazmi A., H  iby N. Effects of subcutaneous injection with different doses of ginseng on a rat model of chronic *Pseudomonas aeruginosa* pneumonia. *Chinese Journal of Integrated Traditional and Western Medicine* 1998; 18: 546-549.
12. Song Z., Kharazmi A., Wu H., Faber V., Moser C., Johansen HK., Rygaard J., H  iby N. Effects of ginseng treatment on neutrophil chemiluminescence and IgG subclasses in a rat model of chronic *Pseudomonas aeruginosa* pneumonia. *Clinical and diagnostic laboratory immunology* 1998; 5: 882-887.
13. Moser C., Kjaergaard S., Pressler T., Kharazmi A., Koch C., H  iby N. The immune response to chronic *Pseudomonas aeruginosa* lung infection in cystic fibrosis patients is predominantly of a Th2 type. *APMIS*. 2000. 108:329-335.
14. Moser C., Hougen HP., Song Z., Rygaard J., Kharazmi A., H  iby N. Early immune response in susceptible and resistant mice strains with chronic *Pseudomonas aeruginosa* lung infection determines the type of T-helper cell response. *APMIS* 107: 1093-100; 1999.
15. Wu H, Song Z, Mathee K, Hentzer M, Andersen JB, Heydorn A, Moser C, Eberl L, Molin S, H  iby N, Givskov M. In vivo detection of *N*-acyl-homoserine lactones in lung tissues infected with *Pseudomonas aeruginosa* associated with pulmonary infection in cystic fibrosis. *Microbiology*. 2000. 146: 2481-2493.
16. Song Z., Johansen HK., Moser C., Faber V., Kharazmi A., Rygaard J., H  iby N. Effects of *Radix Angelicae Sinensis* and *Shuanghuanglian* on a rat model of chronic *Pseudomonas aeruginosa* pneumonia. *Chinese Medical Sciences Journal*. 2000. 15: 83-88.
17. Song Z., Moser C., Wu H., Faber V., Kharazmi A., H  iby N. Cytokine modulating effect of Ginseng treatment in a mouse model of *Pseudomonas aeruginosa* lung infection. *J Cystic Fibrosis* 2003; 112-119.
18. Moser, C., Jensen, PO., Kobayashi, O., Hougen HP., Song, Z., Rygaard J., Kharazmi, A., H  iby, N. Improved outcome of chronic *Pseudomonas aeruginosa* lung infection is associated with induction of a Th1-dominated cytokine response. *Clin Exp Immunol*. 2002. 127: 206-13.
19. H  iby N., Pers C., Johansen HK., Hansen H., The Copenhagen Study Group on Antibiotics in Sweat. Excretion of β -lactam antibiotics in sweat - a neglected mechanism for development of antibiotic resistance? *Antimicrobial Agents Chemotherapy*. 2000. 2855-57.

20. Collins MT, Lisby G, Moser C, Chicks D, Christensen S, Reichelderfer M, et al. Results of multiple diagnostic tests for *Mycobacterium avium* subsp. *paratuberculosis* in patients with inflammatory bowel disease and controls. *J Clin Microbiol* 2000. 4373-81.
21. Garred P, Pressler T, Lanng S, Madsen HO, Moser C, Lauersen I, Balstrup F, Koch C. Mannose-binding lectin (MBL) therapy in an MBL-deficient patient with severe CF lung disease. *Ped Pulm* 2002. 33: 201-7.
22. Calum H, Moser C, Jensen PØ, Shirai R, Høiby N. Cytokine and surface receptor diversity of NK cells in resistant C3H/HeN and susceptible BALB/c mice with chronic *Pseudomonas aeruginosa* lung infection. *APMIS* 2003, 891-897.
23. Jensen PØ., Moser C., Kobayashi O., Hougen HP., Kharazmi A., Høiby N. Faster activation of polymorphonuclear neutrophils in resistant mice during early innate response to *Pseudomonas aeruginosa* lung infection. *Clin Exp Immunol.* 2004. 137: 478-85.
24. Larsen MW, Moser C, Høiby N, Song Z, Kharazmi A. Ginseng modulates the immune response by induction of interleukin-12 production. *APMIS* 2004. 112: 369-73.
25. Lüttichau HR, Lewis IC, Jensen PØ, Moser C, Gerstoft J, Schwartz TW. A highly selective CCR2 chemokine agonist encoded by human herpesvirus 6. *J Biol Chem* 2003. 278: 10928-33.
26. Bjarnsholt T, Jensen PØ, Rasmussen TB, Christophersen L, Hentzer M, Hougen HP, Rygaard J, Moser C, Eberl L, Høiby N, Givskov M. Garlic blocks the *Pseudomonas aeruginosa* communication systems and promotes rapid clearing of pulmonary *Pseudomonas aeruginosa* infections. *Microbiology* 2005. 151: 3873-80. 2005.
27. Bjarnsholt T, Jensen PØ, Burmølle M, Hentzer M, Haagensen JA, Hougen HP, Calum H, Madsen KG, Moser C, Molin S, Høiby N, Givskov M. *Pseudomonas aeruginosa* tolerance to tobramycin, hydrogen peroxide and polymorphonuclear leukocytes is quorum-sensing dependent. *Microbiology* 2005. 151:373-83.
28. Moser C, Jensen PØ, Pressler T, Frederiksen B, Lanng S, Kharazmi A, Koch C, Høiby N. Serum concentrations of GM-CSF and G-CSF correlate with the Th1/Th2 cytokine response in cystic fibrosis patients with chronic *Pseudomonas aeruginosa* lung infection. *APMIS* 2005. 113: 400-9.
29. Jensen PØ, Moser C, Kharazmi A, Pressler T, Koch C, Høiby N. Increased serum concentrations of G-CSF in cystic fibrosis patients with chronic *Pseudomonas aeruginosa* pneumonia. *JCF.* 2006; 5:145-51.
30. Jensen PØ, Bjarnsholt T, Phipps R, Rasmussen TB, Calum H, Christophersen L, Moser C, Williams P, Pressler T, Givskov M, Høiby N. Rapid necrotic killing of polymorphonuclear leukocytes is caused by quorum-sensing-controlled production of rhamnolipid by *Pseudomonas aeruginosa*. *Microbiology* 2007. 153: 1329-38.
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32. Larsen MKS, Thomsen TR, Moser C, Høiby N, Nielsen PH. Diagnosis of central-venous catheter colonizations using cultivation-dependent and -independent techniques. *BMC Clinical Pathology* 2008. 8:10.
33. Moser C, Andresen K, Kjerulf A, Salamon S, Kemp M, Christensen JJ. Infective arthritis: PCR for bacterial 23S rRNA gene as a supplementary method for diagnosis. *Open Microbiology Journal* 2008. 2:85-8.
34. Moser C, van Gennip M, Bjarnsholt T, Jensen P, Lee B, Hougen HP, Calum H, Ciofu O, Givskov M, Molin S, Høiby N. Novel experimental *Pseudomonas aeruginosa* lung infection model mimicking long-term host-pathogen interactions in cystic fibrosis. *APMIS* 2009. 117:95-107.
35. Bohn Y-ST, Brandes G, Salunkhe P, Rakhimova E, Munder A, Jordan D, Bredenbruch F, Häussler S, Jensen P, Bjarnsholt T, Moser C, Høiby N, Wiehlmann L, Tümmler B. Multiple roles of *Pseudomonas aeruginosa* TBCF 10839 PilY1 in motility, transport and infection. *Mol Microbiology* 2009. 71:730-47.
36. Kirketerp-Møller K, Jensen PØ, Fazli M, Fiandaca MJ, Pedersen J, Moser C, Tolker-Nielsen T, Høiby N, Givskov M, Bjarnsholt T. The distribution, organization and ecology of bacteria in chronic wounds. *J Clin Microbiol* 2008. 46: 2717-22.
37. Calum H, Moser C, Jensen PØ, Christophersen L, Malling D, van Gennip M, Bjarnsholt T, Hougen HP, Givskov M, Jacobsen GK, Høiby N. Thermal injury induces impaired function in polymorphonuclear neutrophil granulocytes and reduced control of burn wound infection. *Clin Exp Immunol* 2009. 156:102-10.
38. Nielsen, Xiaohui Chen; Nielsen, Finn; Kurtzhals, Jørgen; Moser, Claus; Boye, Kit; Christensen, Jens Jørgen; Johansen, Ulla; Westh, Henrik. Management of recurrent pacemaker-related bacteraemia with small colony variant *Staphylococcus aureus* in a haemodialysis patient. *BMJ* 2009.

39. Møller, Tom; Nielsen, Ove Juul, Welinder, Pernille; Dünweber, Anne; Hjerding, Maiken; Moser, Claus; Kjeldsen, Lars. Safe and feasible outpatient treatment following induction and consolidation chemotherapy for patients with acute leukaemia. *Eur J Haematology* 2010. 84:316-22.
40. Gennip, van M; Moser, C; Christensen, LD; Bjarnsholt, T; Calum, H; Jensen, PØ; Christophersen L; Hougen HP; Ciofu, O; Molin, S; Givskov, M; Høiby, N. Augmented effect of early antibiotic treatment in mice with experimental lung infections due to sequentially adapted mucoid strains of *Pseudomonas aeruginosa*. *JAC* 2009. 64:1241-50.
41. Gennip, van M; Christensen, LD; Alhede, M; Phipps, RK; Jensen, PØ; Christophersen, L; Pamp, SJ; Moser, C; Mikkelsen, PJ; Koh, AY; Tolker-Nielsen, T; Pier, GB; Høiby, N; Givskov, M; Bjarnsholt, T. Inactivation of the *rhlA* gene in *Pseudomonas aeruginosa* prevents rhamnolipid production, disabling the protection against polymorphonuclear leukocytes. *APMIS* 2009. 117: 537-46.
42. Alhede, M; Bjarnsholt, T; Jensen, PØ; Phipps, RK; Moser, C; Christophersen, L; Christensen, LD; Gennip, van M; Parsek, M; Høiby, N; Rasmussen, TB; Givskov, M. *Pseudomonas aeruginosa* recognizes and responds aggressively to the presence of polymorphonuclear leukocytes. *Microbiology* 2009. 155; 3500-8.
43. Wolff, T; Moser, C; Bundgaard, H Høiby, N; Nielsen, PH, Thomsen, TR. Detection of microbial diversity in endocarditis using cultivation- independent molecular techniques. *Scand J Infect Dis*. 2011; 43:857-69.
44. Kolpen, M; Hansen, CR; Bjarnsholt, T; Moser, C; Christensen, LD; van Gennip, M; Ciofu, O; Mandsberg, L; Kharazmi, A; Döring, G; Givskov, M; Høiby, N; Jensen, PO. Polymorphonuclear leukocytes consume oxygen in sputum from chronic *Pseudomonas aeruginosa* pneumonia in cystic fibrosis. *Thorax* 2010. 65:57-62.
45. Wu H, Santoni-Rugiu E, Ralfkiaer E, Porse BT, Moser C, Høiby N, Borregaard N, Cowland JB. Lipocalin 2 is protective against *E. coli* pneumonia. *Respir Res* 2010; 11:96.
46. Poulsen J, Moser C, Espersen K, Møller K. Austrian syndrome. *BMJ Case reports* 2010.
47. Novovic S, Semb S, Olsen H, Moser C, Knudsen JD, Homann C. First-line treatment with cephalosporins in spontaneous bacterial peritonitis provides poor antibiotic coverage. *Scand J Gastroenterology*. 2011; 47:212-6.
48. Bomholt T, Moser C, Sander K, Boesgaard S, Køber L, Olsen PS, Hansen PB, Mortensen SA, Gustafsson F. Driveline infections in patients supported with a HeartMate II: incidence, aetiology and outcome. *Scand Cardiovasc J*. 2011; 45:273-8.
49. Lauridsen T, Bruun LE, Rasmussen RV, Arpi M, Risum N, Moser C, Johansen HK, Bundgaard H, Hassager C, Bruun NE. Linezolid as rescue treatment for left-sided infective endocarditis: an observational, retrospective, multicenter study. *Eur J Clin Microbiol Infect Dis*. 2012; 31: 2567-74.
50. Hummelshøj T, Ma YJ, Munthe-Fog L, Bjarnsholt T, Moser C, Skjoedt MO, Romani L, Fujita T, Endo Y, Garred P. The interaction pattern of murine serum ficolin-A with microorganisms. *PLoS One* 2012; 7(5):e38196.
51. Jakobsen TH, van Gennip M, Phipps RK, Shanmugham MS, Christensen LD, Alhede M, Skindersoe ME, Rasmussen TB, Friedrich K, Uthe F, Jensen PØ, Moser C, Nielsen KF, Eberl L, Larsen TO, Tanner D, Høiby N, Bjarnsholt T, Givskov M. Ajoene, a sulphur-rich molecule from garlic inhibits genes controlled by quorum sensing. *AAC*. 2012; 56: 2314-25.
52. Christophersen LJ, Trøstrup H, Damlund DSM, Bjarnsholt T, Thomsen K, Jensen PØ, Hougen HP, Høiby N, Moser C. Bead-size directed distribution of *Pseudomonas aeruginosa* results in distinct inflammatory response in a mouse model of chronic lung infection. *CEI* 2012; 170:222-30.
53. Trøstrup H, Thomsen K, Christophersen LJ, Hougen HP, Bjarnsholt T, Jensen, PØ, Kirkby N, Calum H, Høiby N, Moser C. *Pseudomonas aeruginosa* biofilm aggravates skin inflammatory response in BALB/c mice in a novel chronic wound model. *Wound Repair Reg* 2013. 21:292-9.
54. Eickhardt S, Brændstrup P, Clasen-Linde E, Jensen KE, Bjarnsholt T, Høiby N, Vindeløv L, Moser C. A Non-fatal case of invasive zygomycete (*Lichtheimia corymbifera*) infection in an allogeneic hematopoietic cell transplant recipient. *APMIS* 2013. 121:456-9.
55. Iversen K, Høst N, Bruun NE, Elming H, Pump B, Friis H, Gill S, Rosenvinge F, Egeblad H, Wiggers H, Fuursted K, Hansen CH, Korup E, Schønheyder HC, Hassager C, Larsen JH, Moser C, Ihlemann N, Bundgaard H. Partial Oral Treatment of Endocarditis. *Am Heart J*. 2013. 165:116-22.
56. Dahl A, Rasmussen RV, Bundgaard H, Hassager C, Bruun LE, Lauridsen TK, Moser C, Sogaard P, Arpi M, Bruun NE. *Enterococcus faecalis* infective endocarditis: relationship between duration of Gentamicin treatment and outcome. *Circulation* 2013. 127:1810-17.
57. Wolff TY, Eickhardt S, Björnsdóttir MK, Moser C, Bjarnsholt T, Høiby N, Thomsen TR. Direct sequencing and RipSeq interpretation as a tool for identification of polymicrobial infections. *J Clin Microbiol* 2013. 51:1281-4.

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59. KN Kragh, M Alhede, PØ Jensen, C Moser, CS Jacobsen, S Seier Poulsen, S Eickhardt, H Trøstrup, L Christoffersen, HP Hougen, M Givskov, M Kühl, N Høiby and T Bjarnsholt. PMNs restrict the growth of *Pseudomonas aeruginosa* in lungs of Cystic Fibrosis patients. *IAI* 2014. 82:4477-86.
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61. TH Jakobsen; MA Hansen; PØ Jensen; L Hansen; L Riber; A Cockburn; M Kolben; CR Hansen; S Eickhardt; M Hansen; P Kerpedjiev; M Alhede; K Qvortrup; M Burmølle; C Moser; M Kühl; O Ciofu; M Givskov; SJ Sørensen; N Høiby; T Bjarnsholt. Complete Genome Sequence of the Cystic Fibrosis Pathogen *Achromobacter xylosoxidans* NH44784-1996 Complies with Important Pathogenic Phenotypes. *PLoS ONE* 2013. 8:e68484.
62. Rammer P, Calum H, Moser C, Björnsdóttir MK, Smedegaard H, Høiby N, Bjarnsholt T. *Dietzia papillomatosus* bacteremia. *JCM* 2013. 51: 1977-8.
63. HH Uhlving, CB Andersen, IJ Christensen, M Gormsen, KD Pedersen, F Buchvald, C Heilmann, KG Nielsen, J Mortensen, C Moser, H Sengeløv, KG Müller. Biopsy-Verified Bronchiolitis Obliterans in Allogenic Haematopoietic Stem Cell Transplantation. *Biology of Blood and Marrow Transplantation* 2015. 21:531-8.
64. Kolpen M, Kühl M, Bjarnsholt T, Moser C, Hansen C, Liengaard L, Kharazmi A, Pressler T, Høiby N, Jensen PØ. Nitrous Oxide Production in Sputum from Cystic Fibrosis Patients with Chronic *Pseudomonas aeruginosa* Lung Infection. *PLoS ONE* 2014. 17;9(1):e84353.
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69. Frydland M, Bundgaard H, Moser C, Dahlstrøm CG, Ihlemann N. FØDEVAREBETINGET *LISTERIA MONOCYTOGENES* ENDOKARDIT. *Ugeskrift for Læger* 2014. 24:176(48).
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72. Thomsen K, Christophersen L, Jensen PØ, Bjarnsholt T, Moser C, Høiby N. Anti-*Pseudomonas aeruginosa* IgY antibodies promote bacterial opsonization and augment the phagocytic activity of polymorphonuclear neutrophils. *Human Vaccines and Immunotherapy* 2016. 12(7):1690-9.
73. Jansen LC, Dargis R, Bundgaard H, Moser C, Christensen JJ, Kemp M. Infective endocarditis caused by *Bartonella quintana* in Greenland. *JMM Case Reports* Vol 1, 2014.
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76. Calum H, Moser C, Jensen PØ, Bjarnsholt T, Hougen HP, Givskov M, Jacobsen GK, Høiby N. Early IL-2 treatment of mice with *Pseudomonas aeruginosa* pneumonia induced PMN-dominating response and reduced lung pathology. 2015 **under revision**.

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81. Kim Thomsen, Hannah Trøstrup, Lars Christophersen, Rasmus Lundquist, Niels Høiby and Claus Moser. Maintained burst and phagocytosis effect of leucopatches reason for beneficial impact on non-healing wounds? CEI 2016. 184(3):368-77.
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