# Erwin Boghaert, MD/MS

## SUMMARY:

- Researcher with approximately 30 years of experience in fundamental and applied cancer research.
- Work experience in academic as well as industrial setting
- Good understanding of unmet medical needs and potential therapeutic targets for cancer patients
- Experience as team leader in advancing experimental drugs to clinical trial
- Vast experience with advanced cancer modeling (three-dimensional cultures, confrontation cultures, invasion and angiogenesis models) in vitro
- Vast experience with orthotopic and heterotopic xenograft models. Skills include survival surgery and imaging of small rodents.
- Efficient communication and teaching skills
- Efficient mathematical skills to analyze complex data sets
- Combined medical and molecular biology background is ideally suitable for translational research

## CAREER GOALS:

- Obtain a leadership position in development of cancer therapeutics with emphasis on translational research
- Responsibilities should ideally include research towards identification of molecular biomarkers for the efficacy of experimental therapeutics

## MAJOR RESEARCH INTERESTS:

- Applied research towards targeted anti-cancer therapy with macromolecular carrier (Emphasis on expansion of ADC platform by means of alternative payload)
- Isolation of tumor stem cells for drug discovery
- Identification of clinical relevance of cancer models *in vitro* and *in vivo*
- Fundamental research towards molecular mechanisms underlying the relationship between inhibition of src kinase and restoration of homotypic cell-cell adhesion on the one hand and reduction of invasion and metastasis on the other hand.

## PERSONALIA:


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| FULL NAME: | Boghaert, Erwin, Raymond, Arsene |
| HOME ADDRESS: | 4510 Springbrook Road<br>Pleasant Prairie, WI 53158 (USA)<br>Tel 845 492 6446<br>erwinboghaert@gmail.com |
| WORK ADDRESS: | AbbVie<br>1 North Waukegan Road<br>North Chicago, IL 60064<br>Tel 847 937 0062<br>erwin.boghaert@abbvie.com |

## EXPERIENCE:

CLINICAL ACTIVITIES:
- 1982-1984: General practice

RESEARCH EXPERIENCE:
-Januari 2013 - Present: Senior Principal Scientist AbbVie. Fields of study: Mouse models to investigate 'on target' and 'on mechanism' efficacy of small molecule apoptosis restoring agents, therapeutic antibodies and antibody drug conjugates. Validation of predictive value of 3-D cancer models.
Responsibilities include: identification of new therapeutic targets, establish appropriate assays in vivo to test efficacy of experimental small molecules and biotherapeutics, supervise execution of experiments and data analysis, participate in filing of regulatory documents.
-September 2008-December 2012: Senior Group Leader Abbott. Fields of study: Mouse models to investigate 'on target' and 'on mechanism' efficacy of small molecule apoptosis restoring agents, therapeutic antibodies and antibody drug conjugates.
Responsibilities include: identification of new therapeutic targets, establish appropriate assays in vivo to test efficacy of experimental small molecules and biotherapeutics, supervise execution of experiments and data analysis, participate in filing of regulatory documents.
-September 2007-September 2008: Senior Researcher Wyeth Research. Current position: Principal Research Scientist. Field of study: **Targets for therapeutic intervention in tumor-host interactions.**
Responsibilities include: identification of new therapeutic targets, establish appropriate assays (in vitro and in vivo) to test efficacy of experimental biotherapeutics, supervise execution of experiments and data analysis (3 direct reports), lead advancement of projects to development stage in collaboration with multidisciplinary team and provide training in rodent surgery and three-dimensional culture techniques to departmental staff.
-April 2006-September 2007: Acting Director Wyeth Research. Field of study: **Targets for therapeutic intervention in tumor-host interactions.**
-1997-April 2006: Senior Researcher Wyeth Research. Field of study: **Targeted chemotherapy**
-1992-1996: Research assistant professor Surgery**,** University of Kentucky. Field of study: **Determination of molecular mechanisms of invasion or metastasis in rodent fibrosarcoma and glioblastoma models and in human thyroid cancer and melanoma. (Focus on invasion inhibition by stimulation of homotypic cell cell adhesion)**
- 1988-1991: Visiting scholar under Prof. Dr. S. Zimmer, Dept. Microbiology and Immunology, University of Kentucky. Field of study: **Evaluation of invasion assays *in vitro* for clinical and therapeutic applicability.**
- 1985-1987: Associate research assistant under Prof. Dr. M. Mareel, Laboratory for experimental cancerology, State University of Ghent. Field of study**: Invasion mechanisms of malignant tumors.**
- 1984-1985: Associate research assistant under Prof. Dr. W. Fiers, Dept. Molecular Biology, State University of Ghent. Field of study: **Chemical binding of Ricin-A to a monoclonal antibody against alkaline phosphatase.**
- 1983-1984: Research assistant under Prof. Dr. W. Fiers, Dept. Molecular Biology, State University of Ghent. Field of study: **Cytotoxic effects of monoclonal antibodies directed against human tumor cells.**
- 1982: research assistant under Prof. Dr. R. Wieme, Dept. Clinical Biology, State University of Ghent. Field of study: **Iso-enzyme patterns of pyruvate kinase from brain tumor extracts and serum.**

TEACHING EXPERIENCE:
Courses: Substitute lecturer – **Pathology** - Woundhealing (1990 – University of Kentucky)
Tutor – Problem Based Learning (PBL)-sessions – **Cellular structure and function** – hemoglobinopathies – Severe combined immune deficiency (1993 – University of Kentucky)
Tutor – PBL – **Virology** – RNA viruses (1994 – University of Kentucky)
Tutor – PBL - **Virology** – RNA & DNA viruses (1995 – University of Kentucky)
Conceptual and technical training graduate students and interns:

1986-1987: Libert, C.: 'In vitro" en "in vivo" interacties tussen clonale subpopulaties afkomstig van een muis adenocarcinoma. Dissertation to obtain MS. degree in zoology, biotechnological orientation. State University of Ghent (Belgium)
1988-1994: Austin, V.: effect of nuclear and cytoplasmatic suppressor genes on Ras-induced malignancy. PhD, University of Kentucky
1988-1994: Davis, T.: The effects of groupII phospholipase A2 on Ras-induced malignancy. PhD, University of Kentucky
1989-1991: Brady-Kalnay, S.: The role of N-CAM-medicated cell-cell adhesion in invasion. PhD, University of Cincinnati
1989-1994: Graff, J.: The influence of translation initiation factor eIF4E on Ras-induced malignancy. PhD, University of Kentucky
1991-1994: Murali, A.: Chemical and genetic approaches to inhibiting invasion of c-Ha-ras transformed hamster glial cells in vitro. MS, University of Kentucky
1994-1997: Greenberg, V.: Influence of nm23 and L-CAM expression on malignancy of anaplastic thyroid cancer. PhD, University of Kentucky
1998, 1999 – 2001: Frommer E.: Establishment of cell-based E-Cadherin assays. Immunohistochemical analysis of tumor sections stained for the presence of 5T4. Wyeth Research
2015: Bernardi M: Use of 3-dimensional spheroid models to assess preclinical efficacy of antibody-drug conjugates. AbbVie

## ACCOMPLISHMENTS:

- Identified TPBG as a marker for cancer stem cells and as a tumor-associated antigen for antibody-guided chemotherapy
- Demonstrated possibility to use antibody-calicheamicin conjugates for treatment of solid tumors.
- Designed model for quantitative evaluation of invasion *in vivo*.
- Designed method to evaluate the influence of cell-cell adhesion and proliferation on quantitative evaluation of invasion *in vitro*.
- Demonstrated the role of N-CAM in inhibition of proliferation of glial cells.
- Demonstrated a role for translation initiation factor eIF4E in invasion and metastasis.

## EDUCATIONAL BACKGROUND:

STUDIES:

*High School*: St.-Lievenscollege, Ghent (Belgium), Latin-Science
*University*: State University of Ghent, Belgium, AB, 1978, Candidate in Medical Sciences
State University of Ghent, Belgium, MD, 1982, Doctor in Medicine, Surgery and Obstetrics
State University of Ghent, Belgium, postgraduate MS., 1984, Special licentiate in Molecular Biology (Magna cum laude).

LANGUAGES:

Dutch, French, English (active); German, Latin (passive)

GRANTS AND HONORS:
- 1986: Grant from: "Belgsich werk tegen kanker"
- 1987: Invited speaker at Janssen Pharmaceuticals (Dept. of Life Sciences): "Spheroids and artificial tumors, their use in the study of invasion and metastasis and their applications to the study of clonal interactions."
- 1987: Elected member of scientific organization: "Belgische vereniging voor de studie van de kanker (BVSK)"
- 1988: NATO research fellowship

- 1992: Glycomed® funding for initial study regarding influence of collagenase inhibitors on metastasis in vivo. (Collaboration with Dr. Zimmer)
- 1993: Co-investigator: Somatostatin inhibition of human thyroid cancer. Grant from the Lexington Clinic Foundation for Medical Research and Education (Principal Investigator: Dr. Ain)
Principal Investigator: "The function of the *gro* – gene- expression in IL-1 induced tumor growth arrest." Grant from AMERICAN CANCER SOCIETY/Markey
-1994: Co-investigator: "Human thyroid carcinoma inhibition by somatostatin" NIH R29CA 58935-01A1 (P.I. Ain K.)

## **MEMBERSHIP OF SCIENTIFIC ORGANIZATIONS**:

- 1987: Belgische vereniging voor celbiologie
- 1988: European Cell Biology Organization
- 1991: American Association for the Advancement in Science (AAAS)
- 1992: Metastasis Research Society

## LIST OF PUBLICATIONS:

RESEARCH PUBLICATIONS:

Tao, Z-F; Hasvold, L; Wang, L; Wang, X; Petros, AM; Park, CH; *Boghaert, E*; Catron, ND; Chen, J; Colman, PM; Czabotar, PE; Deshayes,K; Fairbrother, WJ; Flygare, JA; Hymowitz,SG; Jin, S; Koehler, MFT; Kovar,PJ; Lessene, G; Mitten, M; Ndubaku, C.; Nimmer, P; Purkey, H; Oleksijew, A; Phillips, D; Sleebs, B; Smith, BJ; Watson, K; Xiao,Y, Xue, J; Zhang, H; Zobel, K; Rosenberg, S; Tse, C; Leverson, J; Elmore, SW and Souers, AJ. Discovery of a Potent and Selective BCL-$X_L$ Inhibitor That Demonstrates On-Target *In Vivo* Activity. In preparation

Wang, J; Goetsch, L; Tucker, L; Zhang, Q; Gonzalez, A; Vaidya, K; Oleksijew, A; *Boghaert, E*; Song, M; Sokolova, I; Pestova, E; Anderson, M; Pappano, W; Bhathena, A; Naumovski, L; Corvaia, N and Reilly, E. The antagonistic anti-c-Met antibody ABT-700 overcomes MET oncogene addiction and inhibits the growth of tumors with MET amplification. In preparation

Phillips, AC; *Boghaert, ER*; Vaidya, K; Mitten, MJ; Norvell, S; Falls, HD; DeVries, PJ; Chen, D; Meulbroek, JA; Buchanan, FG; McKay, LM; Goodwin, N and Reilly, EB. ABT-414, an Antibody Drug Conjugate Targeting a Tumor-Selective EGFR Epitope. In preparation

*Boghaert ER*, Lu X, Hessler P, McGonigal T, Oleksijew A, Mitten M, Foster K, Hickson J, Santo EV, Brito C , Uziel T and Vaidya K The diameter of three-dimensional tumor cell aggregates influences the cancer cell functions emulated *in vitro*. In preparation

Santo, VE; Estrada, MF; Rebelo, SP; Silva, IS; Pinto, C; Veloso, SC; Serra, T; *Boghaert, ER*; Alves, PM and Brito, C. Large scale production of multicellular spheroid-based tumor cell models in stirred-tank culture systems. Submitted to Journal of Biotechnology

Punnoose, E; Leverson, JD; Peale, F; *Boghaert, ER*; Belmont, L; Mitten, M; Young, A; Darbonne, W; Ingalla, E; Oleksijew, A; Tapang, P; Yue, P; Oeh, J.; Lee, L; Fairbrother, WJ; Souers, AJ and Sampath, D. Expression profile of BCL-2, BCL-XL and MCL-1 predicts pharmacological response to the BCL-2 selective antagonist venetoclax in multiple myeloma models. Submitted to Molecular Cancer Therapeutics

Leverson, JD; Phillips, DC; Mitten, MJ; *Boghaert, ER*; Diaz, D; Tahir, SK; Belmont, LD; Nimmer, P; Xiao, Y; Ma, XM; Lowes, KN; Kovar, P; Chen, J; Jin, S; Smith, M; Xue, J; Zhang, H; Oleksijew, A; Magoc, TJ; Vaidya, K; Albert, DH; Tarrant, JM; La, N; Wang, L; Tao, Z-F; Wendt, M; Sampath, D; Rosenberg, SH; Tse, C; Huang, DCS; Fairbrother, WJ; Elmore, SW and Souers, AJ. Exploiting selective BCL-2 family inhibitors to dissect cell survival dependencies and define improved strategies for cancer therapy. Sci Transl Med: 7(279), 1-12 (2015)

Ackler, S; Oleksijew, A; Chen, J; Chyla, B; Clarin, J; Foster-Duke, K; McGonigal, TP; Mishra, S; Schlessinger, SH; Smith, ML; Tahir, SK; Leverson, JD; Souers, AJ; *Boghaert, ER* and Hickson, J. Clearance of systemic hematologic tumors by venetoclax (ABT-199) and navitoclax. Pharmacology Research and Perspectives: 3(5), 1-16 (2015)

Souers, AJ; Leverson, JD; *Boghaert, ER*; Ackler, SL; Catron, ND; Chen, J; Dayton, BD; Ding, H; Enschede, SH; Fairbrother, WJ; Huang, DC; Hymowitz, SG; Jin, S; Khaw, SL; Kovar, PJ; Lam, LT; Lee, J; Maecker, HL; Marsh, KC; Mason, KD; Mitten, MJ; Nimmer, PM; Oleksijew, A; Park, CH; Park, CM; Phillips, DC; Roberts, AW; Sampath, D; Seymour, JF; Smith, ML; Sullivan, GM; Tahir, SK; Tse, C; Wendt, MD; Xiao, Y; Xue, JC; Zhang, H; Humerickhouse, RA; Rosenberg, SH and Elmore, SW. ABT-199, a potent and selective BCL-2 inhibitor, achieves antitumor activity while sparing platelets. Nature Medicine: 19(2), 202-208 (2013)

Ackler, S; Mitten, MJ; Chen, J; Clarin, J; Foster, K; Jin, S; Phillips, DC; Schlessinger, S; Wang, B; Leverson, J and *Boghaert, ER*. Navitoclax (ABT-263) and bendamustine induce synergistic killing of lymphoma cells *in vitro* and *in vivo*. British Journal of Pharmacology: 167(4), 881-891 (2012)

Damelin, M; Geles, KG; Follettie, MT; Yuan, P; Baxter, M; Golas, J; Dijoseph, JF; Karnoub, M; Huang, S; Diesl, V; Behrens, C; Choe, SE; Rios, C; Gruzas, J; Sridharan, L; Dougher, M; Kunz, A; Hamann, PR; Evans, D; Armellino, D; Khandke, K; Marquette, K; Tchistiakova, L; *Boghaert, ER*; Abraham, RT; Wistuba, II; Zhou, BB. Delineation of a cellular hierarchy in lung cancer reveals an oncofetal antigen expressed on tumor-initiating cells. Cancer Res.: 71, 4236-4246 (2011).

*Boghaert, ER*; Sridharan, L; Khandke, K; Armellino, D; Ryan, MG; Kunz, A; Hamann, P; Marquette, K; Dougher, M; DiJoseph, J; Damle, NK. The oncofetal protein, 5T4 is a suitable target for antibody-mediated anti-cancer chemotherapy with calicheamicin. International Journal of Oncology: 32, 221-234 (2008).

*Boghaert, ER;* Khandke, K; Sridharan, L; Dougher, MM; DiJoseph, JF; Kunz, A; Hamann, PR; Moran, J; Chaudhary, I; Damle NK. Determination of pharmacokinetic values of calicheamicin- antibody conjugates in mice by plasmon resonance analysis of small (5 ul) blood samples. Cancer Chemotherapy and Pharmacology: 61, 1027-1035 (2008).

DiJoseph, JF; Dougher, MM; Armellino, DC; Kalyandrug, L; Kunz, A; *Boghaert, ER*; Hamann, PR; Damle, NK. CD20-specific antibody-targeted chemotherapy of non-Hodgkin's B-cell lymphoma using calicheamicin-conjugated rituximab. *Cancer Immunol Immunother*: 56, 1107–1117 (2007)

*Boghaert, ER*; Khandke, K; Sridharan, L; Armellino, DC; Dougher, MM; DiJoseph, JF; Kunz, A; Hamann, PR; Sridharan, A; Jones, C; Discafani C; Damle, NK. Tumoricidal effect of calicheamicin immuno-conjugates using a passive targeting strategy. *Int. J. Oncology*: 28(3), 675-884 (2006)

DiJoseph, JF; Dougher, MM; Kalyandrug, LB; Armellino, DC; *Boghaert, ER*; Hamann, PR; Moran, JK and Damle, NK. Antitumor Efficacy of a Combination of CMC-544 (Inotuzumab Ozogamicin), a CD22-Targeted Cytotoxic Immunoconjugate of Calicheamicin, and Rituximab against Non-Hodgkin's B-Cell Lymphoma. *Clinical Cancer Research*: 12, 242-249 (2006)

Golas, JM; Lucas, J; Etienne, C; Golas, J; Discafani, C; Sridharan, L; *Boghaert, E*; Arndt, K; Ye, F; Boschelli, DH; Li, F; Titsch, C; Huselton, C; Chaudhary, I; Boschelli, F. SKI-606, a Src/Abl inhibitor with in vivo activity in colon tumor xenograft models. *Cancer Research*: 65, 5358-5364 (2005).

DiJoseph, JF; Popplewell, A; Tickle, S; Ladyman, H; Lawson, A; Kunz, A; Khandke, K; Armellino, DC; *Boghaert, ER*; Hamann, P; Zinkewich-Peotti, K; Stephens, S; Weir, N; Damle, NK. Antibody-targeted chemotherapy of B-cell lymphoma using calicheamicin conjugated to murine or humanized antibody against CD22. *Cancer Immunol Immunother*: 54(1), 11-24 (2005)

DiJoseph, JF; Goad, ME; Dougher, MM; *Boghaert, ER*; Kunz, A; Hamann PR; Damle, NK. Potent and specific antitumor efficacy of CMC-544, a CD-22-targeted immunoconjugate of calicheamicin, against systematically disseminated B-cell lymphoma. *Clinical Cancer Res*: 10(24), 8620-8629 (2004)

*Boghaert, ER*; Sridharan, L; Armellino, DC; Khandke, KM; DiJoseph, JF; Kunz, A; Dougher, MM; Jiang, F; Kalyandrug, LB; Hamann, PR; Frost, P; Damle, NK. Antibody-targeted chemotherapy with the calicheamicin conjugate, hu3S193-N-acetyl gamma calicheamicin dimethyl hydrazide targets Lewis$^{y}$ and eliminates Lewis$^{y}$ positive human carcinoma cells and xenografts. *Clin Cancer Res*: 10(13), 4538-49 (2004)

DiJoseph, JF; Armellino, DC; *Boghaert, ER*; Khandke, K; Dougher, MM;, Sridharan, L; Kunz, A; Hamann, PR; Gorovits, B; Udata, C; Moran, JK; Popplewell, AG; Stephens, S; Frost, P; Damle, NK. Antibody-targeted

chemotherapy with CMC-544: a CD22-targeted immunoconjugate of calicheamicin for the treatment of B-lymphoma malignancies. *Blood*: 103(5), 1807-1814 (2004)

Potla, L; *Boghaert, ER*; Armellino, D; Frost, P and Damle, NK. Reduced expression of EphrinA1 (EFNA1) inhibits three-dimensional growth of HT29 colon carcinoma cells. *Cancer Letters*: 175,187-195 (2002)

Greenberg,VL; Williams, JM; *Boghaert, ER*, Mendenhall, M; Ain, KB and Zimmer, SG. Butyrate alters the expression and activity of cell cycle components in anaplastic thyroid carcinoma cells. *Thyroid*: 11, 21-29 (2001)

Kaetzel, DM; Reid, JD 4th; Pedigo, N; Zimmer, SG and *Boghaert, ER*. A dominant-negative mutant of the platelet-derived growth factor A-chain increases survival of hamsters implanted intracerebrally with the highly invasive CxT24-neo3 glioblastoma cell. *Journal of NeuroOncology*: 39, 13-46 (1998)

Graff, JR; Greenberg, VE; Herman, JG; Westra, WH; Boghaert, ER; Ain, KB; Saji, M; Zeiger,MA; Zimmer, SG, Baylin, SB. Distinct patterns of E-cadherin CpG island methylation in papillar, follicular, Hurthle's cell, and poorly differentiated human thyroid carcinoma. Cancer Res: 58(10), 2063-2066 (1998)

*Boghaert, ER*; Sells, SF; Walid, AJ, Malone, P; Williams, NM; Weinstein, MH; Strange, R; Rangnekar, VM. Immunohistochemical analysis of the proapoptotic protein Par-4 normal rat tissues. *Cell Growth Differ*: 8(8), 881-890 (1997)

Morford, LA; *Boghaert, ER*; Brooks, WH and Roszman, TL. Insulin-like Growth Factors (IGF) enhance monolayer and three-dimensional growth of human glioblastomas. *Cancer Letters*: 115(1), 81-90 (1997)

Sells, SF; Han, S-S; Muthukkumar, S; Maddiwar, N.; Johnstone, R; *Boghaert, ER*; Gillis, D; Liu, G; Nair, P; Monning, S; Collini, P; Mattson, MP; Sukhatme, V; Zimmer, S; Wood, DP; McRoberts, JW and Ragnekar, VM. Expression and function of the leucine zipper protein Par-4 in apoptosis. *Molecular and Cellular Biology*: 17(7), 3823-32 (1997)

Davis, TW; *Boghaert, ER*; Guthridge, CR; Zimmer, CS; Steiner, M and Zimmer, SG. The effects of group II phospolipaaase A2 on ras induced metastasis. *Adv Exp Med Biol*: 400A, 9-17 (1997)

*Boghaert, ER*; Murali, A; Robertson, D and Zimmer, SG. Inhibition of invasion in vitro of ras-transformed hamster glial cells by 13-cis retinoic acid correlates with restored homotypic cell-cell adhesion and N-CAM clustering. *International Journal of Oncology*: 9, 1175-1182 (1996)

*Boghaert, ER*; Ain, KB; Taylor, T; Davis, T and Zimmer, SG. Quantitative differences in invasive behavior of human anaplastic and papillary thyroid carcinoma cell lines assessed in vitro and in vivo. *Clinical and Experimental Metastasis*: 14, 440-450 (1996)

Fowler, C; Zimmer, C; *Boghaert, ER*; Miles, T and Zimmer, SG. Metastasis in the C1300/TBj murine neuroblastoma system is associated with 92 and 72 kilodalton metalloprotease activity. *Cancer Letters*: 93, 171-177 (1995)

Graff, JR; *Boghaert, ER*; DeBenedetti, A; Tudor, DM; Zimmer,C; Chan, SK and Zimmer, SG. Reduction of translation initiation factor 4E decreases the malignancy of ras-transformed cloned rat embryo fibroblasts. *Int J. of Cancer*: 60, 255-263 (1995)

*Boghaert, ER*; Chan, SK; Zimmer, C; Gallardy, R; Grobelny, D; Vanaman, TC and Zimmer, SG. Inhibition of collagenolytic activity correlates with a quantitative reduction of invasion in vitro in a c_Ha-ras transfected glial cell line. *J. NeuroOncology*: 21, 141-150 (1994)

Brady-Kalnay, S; *Boghaert, ER*; Zimmer, SG and Brackenbury, R. Increasing N-CAM mediated cell-cell adhesion does not reduce invasion of RSV-transformed WC 5 rat cerebellar cells. *Clinical and Experimental Metastasis*: 11, 313-324 (1993)

*Boghaert, ER*; Simpson, JF and Zimmer, SG. Invasion in vitro of malignant hamster brain tumor cells in influenced by the number of cells and the mode of malignant progression. *Invasion and Metastasis*: 12, 12-23 (1992)

Brady-Kalnay, SM; *Boghaert, ER*; Zimmer, SG; Soll, DR and Brackenbury, R. Invasion by WC 5 rat cerbellar cells is independent of RS-induced changes in growth and adhesion. *Int. J. Cancer*: 49, 239-245 (1991)

*Boghaert, ER*; Austin, V and Zimmer, SG. The influence of the presence of adnovirus 5 E1a and E1b sequences on the pathology of rat embryonic fibroblasts transfected with activated c-Ha-ras and v-ras. *Clinical and Experimental Metastasis*: 9, 231-243 (1991)

*Boghaert, ER*; Simpson, JF; Jacob, RJ; Lacey, T; Walsh, JW and Zimmer, SG. The effect of dibutyryl cAMP on morphological differentiation, growth and invasion in vitro of a hamster brain tumor cell line. *International Journal of Cancer*: 47, 610-618 (1991)

Messiaen, L; Qia, S; De Bruyne, G; *Boghaert, ER*; Moens,T; Rabaey, M and Mareel, MM. Spontaneous acquisition of tumorigeneity and invasiveness by mouse line explant cells during culture in vitro. *In Vitro: Cellular and developmental biology*: 27A(5): 369-380 (1991)

*Boghaert, ER*; Distelmans, W; Van Ginckel, RE and Mareel, MM. Numerical evaluation of the Kidney Invasion Test. *Invasion and Metastasis*: 7, 230-241 (1987)

Mareel, MM; Van Roy, FM; Messiaen, L; *Boghaert ER* and Bruyneel, EA. Qualitative and quantitative analysis of tumor invasion in vivo and in vitro. *Journal of Cell Science*, Suppl 8: 141-163 (1987)

Mareel, MM; Bracke, ME and *Boghaert, ER*. Tumor invasion and metastasis: Therapeutic implications? *Radiotherapy and Oncology*: 6, 135-142 (1986)

PUBLISHED ABSTRACTS AND BOOK CHAPTERS:

Boghaert, ER; Khandke, K; Sridharan, L; Armellino, DC; DiJoseph, JF; Discafani, C; Marquette, K; Hamann, P; Damle, NK. Efficacy of tumor-targeted chemotherapy with calicheamicin immunoconjugates involving antigen-dependent and antigen-independent mechanisms. International Journal of Molecular Medicine, 16(suppl.1), S13, 2005

DiJoseph, JF; Armellino, D; Dougher, M; Kunz, A; *Boghaert, E*; Hamann, P; Zinkewich-Peotti, K; Damle, N. Antibody-Targeted Chemotherapy with Immunoconjugates of Calicheamicin: Differential Anti-Tumor Activity of Conjugated Calicheamicin Targeted to B-Cell Lymphoma Via B-Cell Lineage Specific Molecules CD19, CD20 and CD22. Blood 104(11) 683a, 2004

DiJoseph, JF; Goad, ME; Dougher, M; *Boghaert, ER*; Damle, NK. Anti-tumor efficacy of CMC-544, a CD22-targeted immunoconjugate of calicheamicin, in a systemically disseminated B-cell lymphoma. Blood 102(11) 645a, 2003

*Boghaert, ER*; Sridharan, L; Armellino, DC; Khandke, KM; DiJoseph, JF; Kalyandrug, LB; Kunz, A; Hamann, PR; Frost, P; Damle, NK. A calicheamicin conjugate that targets LeY selectively destroys LewisY-positive human carcinoma cells and xenografts. Eur. J. Cancer; 38Suppl. 7:S150, 2002

DiJoseph, JF; Armellino, A; Khandke, K; *Boghaert, E*; Dougher, M; Sridharan, L; Kunz, A; Moran, J; Hamann, P; Frost, P; Damle, N. CMC-544, an anti-CD22 antibody-targeted calicheamicin therapeutic for the treatment of B lymphoid malignancies. Blood 100 (11) 160a, 2002

DiJoseph, JF; Armellino, D; Khandke, K; *Boghaert, E*; Dougher, M; Kunz, A; Hamann, P; Moran, J; Frost, P; Damle, N. CMC-544; a CD22-targeted immunoconjugate of calicheamicin for the treatment of non-Hodgkin's lymphoma. Eur. J. Cancer; 38Suppl. 7:S150, 2002

Potla, L; *Boghaert, ER*; Armellino, DC; Frost, P; and Damle, NK. Reduced expression of LERK-1 (EphrinA1) inhibits three-dimensioanl growth of HT-29 colon carcinoma. *Proceedings 90th Annual Meeting of the American Association for Cancer Research*: April 10-14, 1999, Volume 40, March 1999

*Boghaert, ER;* Ain, KB; Taylor, K; Davis, T and Zimmer, SG. Quantitative differences in invasive behavior of human anaplastic and papillary thyroid carcinoma cell lines assessed in vitro and in vivo. *Thyroid*: 3(suppl), 75 (1993)

Freeman, JW; McGrath, P; Fonagy, A; Mattingly, C; *Boghaert, E;* Kenyon, N.and Bolton, W. P120 expression in breast cancer: Relationship to prognosis and cell cycle kinetics. *Journal of Cellular Biochemistry*: Suppl. 16D, 110 (1992)

Brady-Kalnay, S; *Boghaert, E;* Soll, D.; Zimmer, S and Brackenbury, R. Invasion of the WC5 cell line / Role of cell cell adhesion and motility. *J. Cell Biol.*: 111 (5 part 2), 20A (1990)

*Boghaert, ER;* Simpson, JF and Zimmer, SG. Invasion of malignant transformed hamster brain cells through reconstituted extracellular matrix provides evidence for the existence of multiple invasion mechanisms. Communication at the 3rd International Conference of Anticancer Research. *Anticancer Research:* 10, 1446 (1990)

Mareel, MM; Van Roy, F; Messiaen, L; Van Laerebeke, N and *Boghaert, ER*. Correlates of malignancy in cultured cells. *New Frontiers in Cytology. Modern aspects of research and practice.* Springer-Verlag Heidelberg, New York, Tokyo (1988)

*Boghaert, ER;* De Bruyne, GK and Mareel, MM. The use of spheroids and artificial tumors in the study of invasion and metastasis. Third International Conference on Spheroids in Cancer Research. Cambridge, Great Britain. *The British Journal of Cancer*, 56: 691 (1987)

Mareel, MM; Van Roy, FM; Messiaen, L; Bracke, M; *Boghaert, ER* and Coopman, P. Investigations of tumor-invasion mechanisms. *Cells, membranes and disease*: included renal. Eds. Reid, E.; Cook, G.M.W. and Furio, J.P. Plenum Publishing Corporation New York (1987)

PRESENTATIONS AT INTERNATIONAL MEETINGS:

Santo, VE; Estrada, M; Veloso, SC; Sousa, MFQ; van der Kuip, H; Oren, M; *Boghaert, ER*; Alves, PM; Brito, C. Recapitulation of non-small-cell-lung carcinoma microenvironment in perfusion bioreactor cultures: the impact of hypoxia on tumour-stroma crosstalk. In preparation to be presented at EACR Meeting- July 5-8, 2014 Munich

Santo, VE; Estrada, M; Veloso, SC; Sousa, MFQ; van der Kuip, H; Oren, M; *Boghaert, ER*; Alves, PM; Brito, C. Novel robust 3D models of non-small-cell lung carcinoma for target validation and tumour-stroma cross-talk elucidation through fully-controlled bioreactor cultures. In preparation to be presented at DECHEMA Meeting- June 25-27, 2014 Freiburg

Phillips, AC; *Boghaert, ER*; Vaidya, KS; Ansell, PJ; Shalinsky, DR; Zhang, Y; Voorbach, MJ; Mudd, S; Holen, KD; Humerickhouse, RA and Reilly, EB. ABT-414: an Anti-EGFR Antibody Drug Conjugate as a Potential Therapeutic for the Treatment of Patients with Squamous Cell Tumors. AACR-NCI-EORTC Meeting- October 19-23, 2013 Boston

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