Curriculum vitae

Magdalena Gryzik

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Education:

2014-2017	PhD studies in Molecular Genetics, Biotechnologies and Experimental Medicine, Department of Molecular and Translational Medicine, University of Brescia, Italy
2010-2012	Master studies in Environmental Biotechnology, Faculty of Biology and Environmental Protection, University of Silesia in Katowice, Poland
2007-2010	Bachelor studies in Biotechnology of Crop Plants, Faculty of Biology and Environmental Protection, University of Silesia in Katowice, Poland

Theses:

2017	PhD Thesis: Characterization and cloning of human nuclear receptor coactivator 4 (NCOA4), the cargo receptor mediating ferritinophagy
2012	Master Thesis: Analysis of the frequency of *MEN1* mutations in Polish population
2010	Bachelor Thesis: Genes and QTL related to drought stress tolerance in *Hordeum vulgare*

Work Experience:

2023-	Post-Doc position in the laboratory of Molecular Biology, Department of Molecular and Translational Medicine (DMMT), University of Brescia
2022-2023	Fellowship of Fondazione Beretta in the Pathology Unit, University of Brescia, Spedali Civili Brescia, Italy
2021-2022	Fellowship in the laboratory of Molecular Biology, Department of Molecular and Translational Medicine (DMMT), University of Brescia, Italy
2020-2021	Post-doctoral fellowship of Fondazione Umberto Veronesi in the laboratory of Molecular Biology, DMMT, University of Brescia
2019-2020	Fellowship in the laboratory of Molecular Biology, DMMT, University of Brescia
2018-2019	Post-Doc position in the laboratory of Molecular Biology, DMMT, University of Brescia
06-12.2017	Research volunteer in the laboratory of Molecular Biology, DMMT, University of Brescia
01-04.2017	Fellowship in the laboratory of Molecular Biology, DMMT, University of Brescia
2014-2017	Research (PhD Thesis) in the laboratory of Molecular Biology, DMMT, University of Brescia
2010-2012	Research (Master Thesis) in Department of Nuclear Medicine and Endocrine Oncology, Cancer Center and Institute of Oncology, Maria Skłodowska-Curie Memorial, Gliwice Branch, Poland
2009	Professional practice in analytical laboratory in the City Hospital Murcki in Katowice, Poland
2009	Professional practice in Department of Genetics, Faculty of Biology and Environmental Protection, University of Silesia in Katowice, Poland

Skills and Competences:

- Knowledge of techniques of molecular biology: RNA/DNA/protein extraction (mouse tissue, cell culture), polimerase chain reaction (PCR), cDNA synthesis, high resolution melting analysis (HRM), quantitative real-time PCR (RT-qPCR), reverse transcription PCR (RT-PCR), droplet digital PCR (ddPCR), SDS-PAGE, NATIVE-PAGE, western blot, immunohistochemistry, electrophoretic mobility shift assay (EMSA), ELISA assay
- Knowledge of techniques of recombinant protein production: cloning, bacteria culture, induction of protein expression, solubilization, chromatography (metal affinity, gel filtration, desalting), site-directed mutagenesis
- Maintenance of cell cultures: HeLa, HEK293T, neuroblastoma SH-SY5Y, hepatocellular carcinoma HepG2, erythroleukemia K562, colorectal adenocarcinoma Caco-2, acute monocytic leukemia THP-1, ovarian adenocarcinoma OVCAR3, ovarian tumor OV7, glioblastoma stem cells (BT302, BT334, BT483, L0512, CT014), chordoma CH3 cell line

- Knowledge of techniques in mammalian cell culture: MTT viability assay, calcein-AM assay, crystal violet assay, immunofluorescent cytochemical staining, total iron quantification, lipid peroxidation assay, invasion assay (glioblastoma stem cells), generation of organoids (derived from glioblastoma stem cells), CRISPR/Cas9 system, gene silencing (with esiRNA), transfection with plasmid DNA, transduction with lentivirus, preparation of lentiviral particles
- Knowledge of basic mouse-handling techniques

Other:

- Operation of MS Office, ImageJ, GraphPad
- Languages: Polish – native, English–good knowledge, Italian - basics
- Driving licence cat. B

Publications:

- Liserre R, Branzoli F, Pagani F, **Gryzik M**, Cominelli M, Miele E, Marjańska M, Doglietto F, Poliani PL. Exceptionally rare IDH1-mutant adult medulloblastoma with concurrent GNAS mutation revealed by in vivo magnetic resonance spectroscopy and deep sequencing. Acta Neuropathol Commun. 2023 Mar 20;11(1):47. doi: 10.1186/s40478-023-01531-y. PMID: 36941703.
- Pagani F*, **Gryzik M***, Somenza E, Cominelli M, Balzarini P, Schreiber A, Mattavelli D, Nicolai P, Doglietto F, Poliani PL. Targeting mTOR Pathway in PTEN Deleted Newly Isolated Chordoma Cell Line. J Pers Med. 2023 Feb 27;13(3):425. doi: 10.3390/jpm13030425. PMID: 36983607.
- Asperti M, Cantamessa L, **Gryzik M**, Bugatti M, Codenotti S, Denardo A, Vermi W, Fanzani A, Poli M. The modulation of iron metabolism affects the Rhabdomyosarcoma tumor growth in vitro and in vivo. Clin Exp Med. 2023 Feb 10. doi: 10.1007/s10238-023-01012-5. Epub ahead of print. PMID: 36764998.
- Asperti M, Brilli E, Denardo A, **Gryzik M**, Pagani F, Busti F, Tarantino G, Arosio P, Girelli D, Poli M. Iron distribution in different tissues of homozygous Mask (msk/msk) mice and the effects of oral iron treatments. Am J Hematol. 2021 Aug 3
- Asperti M, Bellini S, Grillo E, **Gryzik M**, Cantamessa L, Ronca R, Maccarinelli F, Salvi A, De Petro G, Arosio P, Mitola S, Poli M. H-ferritin suppression and pronounced mitochondrial respiration make Hepatocellular Carcinoma cells sensitive to RSL3-induced ferroptosis. Free Radic Biol Med. 2021 Jun;169:294-303
- **Gryzik M**, Asperti M, Denardo A, Arosio P, Poli M. NCOA4-mediated ferritinophagy promotes ferroptosis induced by erastin, but not by RSL3 in HeLa cells. Biochim Biophys Acta Mol Cell Res. 2021 Feb;1868(2):118913
- Denardo A, Elli S, Federici S, Asperti M, **Gryzik M**, Ruzzenenti P, Carmona F, Bergese P, Naggi A, Arosio P, Poli M. BMP6 binding to heparin and heparan sulfate is mediated by N-terminal and C-terminal clustered basic residues. Biochim Biophys Acta Gen Subj. 2021 Feb;1865(2):129799
- Srivastava A, Flint N, Kreckel H, **Gryzik M**, Poli M, Arosio P, Bou-Abdallah F. Thermodynamic and Kinetic Studies of the Interaction of Nuclear Receptor Coactivator-4 (NCOA4) with Human Ferritin. Biochemistry. 2020 Jul 28;59(29):2707-2717
- Asperti M, Denardo A, **Gryzik M**, Castagna A, Girelli D, Naggi A, Arosio P, Poli M. Pentosan polysulfate to control hepcidin expression in vitro and in vivo. Biochem Pharmacol. 2020 May;175:113867
- Asperti M, Cantamessa L, Ghidinelli S, **Gryzik M**, Denardo A, Giacomini A, Longhi G, Fanzani A, Arosio P, Poli M. The Antitumor Didox Acts as an Iron Chelator in Hepatocellular Carcinoma Cells. Pharmaceuticals (Basel). 2019 Sep 2;12(3). pii: E129
- Poli M, Anower-E-Khuda F, Asperti M, Ruzzenenti P, **Gryzik M**, Denardo A, Gordts PLSM, Arosio P, Esko JD. Hepatic heparan sulfate is a master regulator of hepcidin expression and iron homeostasis in human hepatocytes and mice. J Biol Chem. 2019 Jul 17. pii: jbc.RA118.007213.
- Asperti M, Denardo A, **Gryzik M**, Arosio P, Poli M. The role of heparin, heparanase and heparan sulfates in hepcidin regulation. Vitam Horm. 2019;110:157-188
- Asperti M, **Gryzik M**, Brilli E, Castagna A, Corbella M, Gottardo R, Girelli D, Tarantino G, Arosio P, Poli M. Sucrosomial® Iron Supplementation in Mice: Effects on Blood Parameters, Hepcidin, and Inflammation. Nutrients. 2018 Sep 21;10(10)
- **Gryzik M**, Srivastava A, Longhi G, Bertuzzi M, Gianoncelli A, Carmona F, Poli M, Arosio P. Expression and characterization of the ferritin binding domain of Nuclear Receptor Coactivator 4 (NCOA4). Biochim Biophys Acta Gen Subj 2017 Nov;1861(11 Pt A):2710-2716
- Asperti M, Stuemler T, Poli M, **Gryzik M**, Lifshitz L, Meyron-Holtz EG, Vlodavsky I, Arosio P. Heparanase Overexpression Reduces Hepcidin Expression, Affects Iron Homeostasis and Alters the Response to Inflammation. PLoS One. 2016 Oct 6;11(10)

- Asperti M, Naggi A, Esposito E, Ruzzenenti P, Di Somma M, **Gryzik M**, Arosio P, Poli M. High sulfation and a high molecular weight are important for anti-hepcidin activity of heparin. Frontiers in Pharmacology. 2016 Jan 11;6:316
- Ruzzenenti P, Asperti M, Mitola S, Crescini E, Maccarinelli F, **Gryzik M**, Regoni M, Finazzi D, Arosio P, Poli M. The Ferritin-Heavy-Polypeptide-Like-17 (FTHL17) gene encodes a ferritin with low stability and no ferroxidase activity and with a partial nuclear localization. Biochim Biophys Acta. 2015 Jun;1850(6):1267-73

Awards:

- Post-doctoral fellowship 2020 of „Fondazione Umberto Veronesi" for the project entitled "The ferritin-RSL3 nanoparticles inducing ferroptosis as a new therapeutic strategy against ovarian cancer"
- Fellowship of „Prof. Roberto Tosoni" 2018-2019 for the project entitled „Ferritin nanoparticles as a new strategy for tumor growth inhibition" (original: „Nanoparticelle di ferritina come nuova strategia per l'inibizione della crescita tumorale")
- 1st Prize in Poster Presentation category (Poster "Characterization and cloning of human nuclear receptor coactivator (NCOA4), the cargo receptor mediating ferritinophagy") on The European Iron Meeting 2016, Innsbruck, Austria, 7-10.04.2016

Membership:

- International Society for the Study of Iron in Biology and Medicine (BioIron)
- Biochemical Society
- American Society for Biochemistry and Molecular Biology
- European Association for Cancer Research

Thesis Co-Supervisor:

2020-2021	Emily Casciotta. "Production of wild type and mutated human Ferritin nanoparticles as biological platform for drug delivery". Bachelor studies in Biology, Department of Life Sciences and Biotechnology, University of Ferrara, Italy
2019-2020	Alina Guritanu. "Ferritin as nanoparticle for the drug delivery of ferroptosis inducers". Bachelor studies in Biotechnology, Department of Molecular and Translational Medicine, University of Brescia, Italy
2018-2019	Vanessa Foti. "Study of Sucrosomial® Iron absorption in human cell line models". Bachelor studies in Biotechnology, Department of Molecular and Translational Medicine, University of Brescia, Italy

Oral Communications:

- **Gryzik M**, Asperti M, Denardo A, Arosio P, Poli M. The role of NCOA4-mediated ferritinophagy differs in erastin- and RSL3-induced ferroptosis pathway in HeLa cells. "Cell Signaling and Intracellular Trafficking in Cancer Biology: Interplay, Targeting and Therapy", Turin, Italy, 21-24.10.2019
- **Gryzik M**, Asperti M, Denardo A, Arosio P, Poli M. NCOA4 expression regulates ferritin accumulation and has differential effects on RSL3- and erastin-induced ferroptosis in HeLa cells. "8th Meeting of the BioIron Society", Heidelberg, Germany, 5-10.05.2019
- **Gryzik M**, Srivastava A, Carmona F, Asperti M, Ruzzenenti P, Poli M, Arosio P. The role of NCOA4 in ferritinophagy and ferroptosis. "3rd Meeting of Polish Iron Club", Gdańsk, Poland, 15-16.09.2017
- **Gryzik M**, Poli M, Di Somma M, Saraceno C, Ruzzenenti P, Asperti M, Regoni M, Arosio P. Characterization and cloning of human nuclear receptor coactivator (NCOA4), the cargo receptor mediating ferritinophagy. "Lombard-Chinese Iron Brainstorm", Milano, Italy, 16.11.2015
- **Gryzik M**, Poli M, Di Somma M, Saraceno C, Ruzzenenti P, Asperti M, Regoni M, Arosio P. Characterization and cloning of human nuclear receptor coactivator (NCOA4), the cargo receptor mediating ferritinophagy. "6th Meeting of the International BioIron Society", Hangzhou, China, 06-10.09.2015

Posters:

- **Gryzik M**, Asperti M, Brilli E, Cantamessa L, Tarantino G, Poli M. Study of the mechanism of absorption of Sucrosomial® iron. "9th Congress of the International Society for the Study of Iron in Biology and Medicine", Darwin, Australia, 27-31.08.2023
- **Gryzik M**, Pagani F, Asperti M, Poliani PL, Poli M. Targeting iron metabolism and ferroptosis as a potential therapeutic approach against chordoma. "9th Congress of the International Society for the Study of Iron in Biology and Medicine", Darwin, Australia, 27-31.08.2023
- **Gryzik M**, Carmona F, Poli M, Arosio P. A study of NCOA4 expression and binding to ferritins. "7th Meeting of the BioIron Society", Los Angeles, USA, 7-11.05.2017
- **Gryzik M**, Poli M, Di Somma M, Saraceno C, Ruzzenenti P, Asperti M, Regoni M, Arosio P. Characterization and cloning of human nuclear receptor coactivator (NCOA4), the cargo receptor mediating ferritinophagy. "The European Iron Meeting 2016", Innsbruck, Austria, 7-10.04.2016 *[awarded with 1st Prize in Poster Presentation category]*
- **Gryzik M.** Production and characterization of recombinant human NCOA4 and its relation to iron metabolism regulation. UNIBSdays, 21.04.2015
- **Gryzik M**, Poli M, Asperti M, Regoni M, Arosio P. Expression of NCOA4, the ferritinophagy mediator, in cell lines and mouse tissues. "The European Iron Meeting 2014", Verona, Italy, 11-14.09.2014