**Thyroid Hormone Enhances Estrogen-mediated Proliferation and Cell Cycle Regulatory Pathways in Steroid Receptor-Positive Breast Cancer**

Reema S Wahdan-Alaswad 1,4, Susan M Edgerton 1,4, Hyun Min Kim7, Aik Choon Tan6, Bryan R Haugen 2,4, Bolin Liu 5, Ann D Thor 1,4

1Department of Pathology, 2Division of Endocrinology, Metabolism, & Diabetes, 3Division of Medical Oncology, Department of Medicine, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA. 4University of Colorado Cancer Center, Aurora, CO, USA. 5Department of Genetics, Stanley S. Scott Cancer Center, School of Medicine, Louisiana State University (LSU) Health Sciences Center, New Orleans, LA 70112. 6Department of Biostatistics and Bioinformatics, Moffitt Cancer Center, Tampa, Florida 33612. 7Case Western Reserve University, Cleveland OH 44106.

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Corresponding Author: Ann Thor, MD

University of Colorado Denver

Department of Pathology

Mail Stop B216

12631 East 17th Ave, Room 2215A,

Aurora, CO 80045, United States of America

E-mail: ann.thor@ucdenver.edu

Phone: 303-724-3746

Fax: 303-724-3031

**Supplemental Figure 1. Thyroid hormone with estrogen enhanced S phase arrest in T47D cells.** (**A**) T47D cells were treated with vehicle (ETOH), E2 (1x10-8 M), TH (T4: 1x10-7 M, T3: 2.5x10-8 M at a 4:1 ratio) or combination of E2+TH with or without tamoxifen (Tam, 1 mM) or fulvestrant (ICI, 1 mM) for 24 hrs. then harvested and stained with propidium iodide (PI) for cell cycle changes as monitored by flow cytometry. G1 phase (black), S phase (red), G2/M phase (white) percent distribution is represented for triplicate experiments. (**B**) Percent S-phase distribution is measured by flow cytometry of PI staining. (**C**) Representative flow cytometry histogram of cell cycle distribution. Student t-test was performed on biological triplicates, \* p<0.0001, # p< 0.001, $ p< 0.01 relative to control or otherwise specified.

**Supplemental Figure 2. Thyroid hormone alone or in combination with estrogen increases colony-forming units in T47D cells**. (**A**) T47D cells were treated as defined in Figure 1A for 7 days than replenished with new media and subsequent treatment for another 7 days. Total colony forming units were imaged at 4x. Representative experiment is shown from three experiments. Scale bar 50 m. (**B**) Colony forming units were quantified using BioRad imager. Student t-test was performed on biological triplicates, \* p<0.0001, # p < 0.001 relative to control or otherwise specified.

**Supplemental Figure 3. TH and estrogen increase expression of cell cycle regulatory proteins and genes to promote cell cycle proliferation and enhances endocrine therapy resistance to tamoxifen in ER+ BC cells.** ER + BC MCF7 (**A**) or ER- BC MDA-MB-468 (**B**) and SKBR3 (**C**) cells were treated withvehicle (ETOH), E2 (1x10-8 M), TH (T4: 1x10-7 M, T3: 2.5x10-8 M at a 4:1 ratio) or combination of E2+TH with or without tamoxifen (Tam, 1 mM) or fulvestrant (ICI, 1 mM) for 5 days and monitored proliferation by MTS assay. (**D-E**) T47D cells treated as described in A for 24 hr. then cells were harvested for qRTPCR analysis of Cyclin A, Cyclin D1 and Cyclin E. Student t-test was performed on biological triplicates, \* p<0.0001 relative to control.

**Supplemental Table 1.** Affymetrix genes affected by thyroid hormone alone or in combination with estrogen with or without tamoxifen treatment in MCF7 and T47D cells.