

# INPLASY

## The different gene expression profile in eutopic and ectopic endometrium sheds new light on the endometrial seed in endometriosis

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### ADMINISTRATIVE INFORMATION

**Support** - Not applicable.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202460009

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 June 2024 and was last updated on 04 June 2024.

### INTRODUCTION

**Review question / Objective** 1. We analyzed RNA array data to identify expression differences between eutopic endometrium without and with endometriosis  
2. We analyzed RNA array data to identify expression differences between eutopic endometrium and ectopic endometriosis  
3. Then we have been interested whether epithelial-mesenchymal transition (EMT) is involved in the pathogenesis of endometriosis  
4. We compared the initial steps of the seed and soil hypothesis of cancer with the pathogenesis of endometriosis.

**Rationale** We wanted to see whether expression changes in the endometrium might contribute to endometriosis and whether EMT is involved in the pathogenesis. Furthermore, we wanted to find out whether the seed and soil hypothesis of tumorigenesis is comparable to endometriosis.

**Condition being studied** We studied endometriosis which is defined by ectopic endometrium mainly in the pelvis. The disease is characterized mainly by extreme pelvic pain and/or infertility.

### METHODS

**Search strategy** Medline with PubMed.

**Participant or population** Patients with and without endometriosis are included, however, only indirectly, because we studied the RNA expression profile of these patients.

**Intervention** Not applicable.

**Comparator** Not applicable.

**Study designs to be included** Only scientific studies showing comparisons between eutopic endometrium without and with endometriosis and between eutopic and ectopic endometriosis will be included.

**Eligibility criteria** Inclusion criteria

- Study desing: Experimental
- Source: Peer reviewed journals
- Study subjects: humans
- Language: N/A
- Disease: Endometriosis
- Technique for analysis: gene expression by array

## Exclusion criteria

- Missing data
- Duplicates.

**Information sources** PubMed, contact with authors.

**Main outcome(s)** We found that the similarity between eutopic endometrium without and with endometriosis is extremely high (~99.1%). In contrast, the eutopic endometrium of patients with endometriosis has a similarity of only 95.3% with the ectopic endometrium. Analysis of EMT-associated genes revealed only minor differences in mRNA expression levels of claudin family members without loss of other cell-cell junctions that are critical for the epithelial phenotype. The array data suggest that the changes in the eutopic endometrium (=seed) are quite subtle at the beginning of the disease and that most of the differences occur after implantation into ectopic locations (=soil). We could show that the initial steps of tumorigenesis are clearly different to endometriosis.

**Quality assessment / Risk of bias analysis** We checked each publication whether the authors provided all data about the array, the methods used, and the study population and whether all data about gene expression have been provided. Risk of bias analysis is not applicable.

**Strategy of data synthesis** The data will be summarized as percentage of gene expression changes between the different groups. Changes in the mRNA expression of EMT-associated genes will be analyzed also.

**Subgroup analysis** Not applicable.

**Sensitivity analysis** Not applicable.

**Country(ies) involved** Deutschland.

**Other relevant information** We want to register the study retrospectively, because we did not know that scientific systematic reviews now also need a registration code in order to be published. 30 years ago when we started to write scientific reviews this was not necessary and the people from the platform PROSPERO still think that

scientific systematic reviews do not need to be registered. Unfortunately, we need the registration code that the review will be published.

**Keywords** endometrium; endometriosis; epithelial-mesenchymal transition (EMT); claudins; keratins; seed and soil.

**Contributions of each author**

Author 1 - Muhammad A Riaz - Collection of manuscripts, writing and proof-reading.

Author 2 - Ezekiel Onyonka Mecha - Suggestions, writing and proofreading.

Author 3 - Charles OA Omwandho - Suggestions, writing and proofreading.

Author 4 - Felix Zeppernick - Suggestions, writing and proofreading.

Author 5 - Ivo Meinhold-Heerlein - Suggestions, writing and proofreading.

Author 6 - Lutz Konrad - Whole concept, literature search, writing and proofreading.

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