activity and CBX2 knockdown led to a decrease in ALDH activity. Examination of primary samples from the GTFB and TMA revealed CBX2 expression is increased in HGSOC and is upregulated in approximately 58% of metastases when compared to the primary tumor.
Conclusions: CBX2 directly impacts proliferation and is overexpressed in HGSOC, indicating CBX2 may be associated with advanced disease. Elucidation of the mechanism is ongoing, however, a stem-like phenotype seems to play a role. This work expands our understanding of HGSOC progression and identifies a novel therapeutic target.

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Poster #31

Salvage treatment in recurrent endometrial cancer of the pelvis and peritoneal cavity

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Objectives: Regional recurrence of endometrial cancer (EC) is uncommon but represents a challenging yet potentially curable group of patients. Here we seek to determine optimal methods of salvage therapy for regionally recurrent EC.
Methods: A single institution database was analyzed from 2007 to present with 22 cases identified of nodal, pelvic, or peritoneal cavity recurrences of EC treated with curative intent. Patient, tumor, and treatment characteristics were identified and analyzed for both initial and recurrent treatment. Univariable Cox proportional hazards models were used to estimate the risk of a second recurrence. Due to sparse event rates, conclusions were confirmed with Fisher's exact tests.
Results: At diagnosis, 73% were endometrioid histology, 73% stage 1, and 27% with LVSI. Of 22 cases of recurrent EC, 13 recurrences (59%) were regional including the pelvic and paraaortic nodes, while 9 recurrences (41%) were to the abdomen. Twelve patients experienced remission from last treatment to most recent follow up ranging from 20 days to over 6 years. Nine (75%) of the patients currently in remission underwent surgery, EBRT, and chemotherapy. Nine of 22 patients experienced a second pelvic or peritoneal recurrence (41%). Three of the 4 patients with distant metastases had regional or abdominal recurrences. The overall probability of survival two years after a regional or abdominal recurrence treated with salvage therapy was 69% (95% CI: 38% - 86%). The overall probability of progression-free survival at 2 years was 51% (95% CI: 26% - 72%).
Conclusions: In this sample, we found no meaningful association of a definitive salvage regimen and survival for recurrent EC of the pelvis and peritoneal cavity. Aggressive use of multimodality therapy with surgery followed by tumor-directed radiotherapy and chemotherapy has favorable progression-free and overall survival in this very high-risk population of recurrent EC patients.

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Poster #32

Determining the methylation patterns of clinically normal endometrium and multiple tumor regions from uteri containing endometrial cancer

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Objectives: Aberrant DNA methylation occurs early in carcinogenesis and is being explored as a biomarker for early detection of endometrial cancer (EC). Methylation can be present as a field effect in histologically normal tissues and can be associated with future cancer development. Additionally, molecular diversity or intratumoral heterogeneity (ITH) within a cancer can be related with a higher risk of recurrence. Here we explore the field effect and ITH of EC through methylation analyses of normal and tumor regions.
Methods: Cases of hysterectomy for EC from 1/2011-12/2013 were retrospectively identified. Women with germline genetic mutations, presence of synchronous cancers, or history of chemotherapy or radiation receipt were excluded. Normal endometrium (NE), pre-cancerous lesions (PC), and up to 3 separate tumor regions from within each hysterectomy specimen were selected by a single gynecologic pathologist. Extracted DNA from each area underwent pyrosequencing of 4 genes previously identified as methylated in type I (RASSF1A, CDH13) or type II (HTR1B, ADCYAP1) EC. Methylation percentage was evaluated individually across CpG sites and averaged across each gene. The CpG sites of each gene were noted to have consistent methylation using hierarchical clustering. Differences in methylation between NE and EC for each gene were assessed using paired t test. Patterns of methylation across the tumor regions within the patient and between patients were assessed using principal component analysis.
Results: Among 24 EC cases, 4 were clear cell (CC), 6 grade 1 or 2 endometrioid adenocarcinoma (EA1/2), 4 grade 3 endometrioid adenocarcinoma (EA3), and 10 serous. The mean age of this cohort was 64 years. In the hysterectomy specimens, NE areas were available in 14/24 (58%), PC lesions in 11/24 (45%) and 3 separate tumor regions in 22/24 women (91%). NE had significantly lower methylation than tumor regions for all the 4 genes (all $p<0.005$). Tumor methylation did not appear to be is associated with age for any of the genes tested. Intratumoral variation in methylation was observed, though the level of magnitude was smaller than the difference in tumor vs. NE or tumor vs. PC lesions. Fig 1
Conclusions: Normal endometrium did not exhibit epigenetic changes identified in EC tumor regions and methylation ITH was observed in EC tumors. Both of these findings suggest molecular changes associated with EC development are focal but heterogeneous.

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Poster #33

Clinicopathologic factors associated with increased risk of recurrence in stage IA grade 1 endometrial cancer

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Objectives: Endometrial cancer (EC) recurrence risk generally depends on pathologic prognostic factors such as stage, grade, depth of myometrial invasion (MI), and lymph node (LN) involvement. FIGO Stage IA grade 1 (IA G1) endometrial cancers lack most adverse features and are categorized in the low recurrence risk group, however, the factors associated with recurrences in this group are not clearly defined though recurrences have been reported in about 5% of cases. The purpose of this study was to identify clinical and pathologic factors that predict for tumor recurrence in IAG1 EC.
Methods: We retrospectively reviewed clinical records for EC patients diagnosed between January 1996 and July 2017 at our institution. 127 patients with FIGO 2009 Stage IA grade 1 EC who underwent surgical resection were included. Baseline characteristics were analyzed with chi-square tests. Univariate logistic regression analysis was performed to test for factors that associate with recurrence.
Results: Median follow up was 22 months (m). Tumor recurrence was recorded in 12 (8.6%) of patients with median time to

recurrence of 22 m (range: 6-47 m). There were 7 (58%) vaginal recurrences, 1 (8%) pelvic, 2 (16%) abdominal, 1 (8%) vagina and pelvis, and 1 (8%) pelvis and abdomen. The cumulative incidence of recurrence (CIR) for all patients at 3 years was 11% (95% Confidence interval (CI): 5-20). For all IAG1 patients, 57 (45%) patients had inner (MI) and 3- year CIR for patients with (MI) was 17% compared to 5% (p= 0.04) in those without MI. CIR was also significant for patients with tumor size greater than 3 cm compared to less than 3cm (20% vs 1.8%, p = 0.01). The average time between biopsy and surgery was 2.3 m (range: 0-25 m). Logistic regression showed that for every one month increase in time from biopsy to surgery there was a 13% increase in the odds of recurrence (OR 1.13, 95% CI 1.03-1.24, p = 0.01). Conventional adverse risk factors of age, number of LNs removed, and LVSI showed no association with recurrence.
Conclusions: In patients with Stage 1A grade 1 EC, time to definitive surgery after biopsy is the most important predictor of recurrence. Patients with MI and tumor size over 3 cm are at higher recurrence risks and should be followed regularly. When possible, time between biopsy and surgery should be limited as this can negatively impact patient outcome.

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Poster #34

Association of low-dose aspirin use and survival of women with monocytosis in endometrial cancer

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Objectives: Tumor-associated macrophages (TAMs) are known to be associated with decreased survival in endometrial cancer. The number of monocytes, progenitors of macrophages, has been shown to be associated with worse survival in endometrial cancer. Given a recent study demonstrating anti-tumor effects with aspirin via TAMs inhibition in other tumor models, this study examined the association of aspirin use on survival among endometrial cancer patients with monocytosis.
Methods: This is a secondary analysis of a previous retrospective cohort evaluating cases of endometrial cancer of all histologic types following hysterectomy-based surgical staging from 2003-2013 (n=541). Disease-free survival from endometrial cancer was compared between women exhibiting monocytosis at diagnosis (defined as >0.7×10^9/L) versus women without monocytosis, stratified by low-dose aspirin use.
Results: The median follow-up of censored cases was 54.6 months, and there were 84 women who developed disease recurrence. At endometrial cancer diagnosis, 106 (19.6%) women used low-dose aspirin whereas 435 (80.4%) women did not. In the non-aspirin group, there were 107 (24.6%) women who had monocytosis, and women with monocytosis had a significantly decreased disease-free survival compared to those without monocytosis (5-year rate, 70.0% versus 81.8%, P=0.001). Aspirin users had a lower frequency of monocytosis compared to non-users (odds ratio 0.59, 95% confidence interval 0.33-1.03, P=0.07). Among the aspirin group (monocytosis, n=17, 16.0%), women with monocytosis had a 5-year disease-free survival similar to those without monocytosis (78.9% versus 88.1%, P=0.94). Neutrophilia, anemia, and thrombocytosis did not demonstrate this association (all, P>0.05).
Conclusions: Our study suggests a protective role of low-dose aspirin in women with endometrial cancer exhibiting monocytosis.

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Poster #35

Pain with no gain? The impact of thoracic epidurals on an enhanced recovery program for open gynecologic surgery

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Objectives: Thoracic epidurals (TEs) have been a key component of opioid-sparing, multimodal perioperative analgesia since the innovation of enhanced recovery after surgery (ERAS) programs. The study objective was to examine the utilization, effectiveness and cost of TEs in an ERAS program for open gynecologic surgery.
Methods: A retrospective review of gynecologic oncology patients undergoing elective laparotomy on a TE-based ERAS program from July 2016 to June 2017 was performed (n=113). Patient demographic, surgical and post-operative variables were collected. These included venue of TE placement, duration of postoperative TE use, indication for TE discontinuation, pain scores, opioid requirements, cost and length of stay (LOS). Pain scores, opioid requirements and LOS were compared between patients with failed TE analgesia and those with consistently functional TEs. Failure was defined as temporary or permanent discontinuation of TE analgesia before tolerance of oral intake. T-tests and Chi squared tests were used to test associations between continuous and categorical variables, respectively. Statistical significance was defined at the $\alpha=0.05$ level.
Results: The overall TE failure rate was 30%. Hypotension was the most common indication for temporary TE discontinuation (84.8%). The most common indications for permanent discontinuation were tolerance of oral intake (70.6%), TE dysfunction (9.1%) and hypotension (8.2%). Supplemental PCA use was required in 40.7% of cases. The average per patient cost of TE was $1480. Intraoperative TE placement was performed in 31.8% of cases. Mean OR time required for TE placement was 19.25 minutes (range 5-45 minutes), adding an average of $280 to the procedure cost. Patients with failed TE analgesia were more likely to have a cancer diagnosis (88.9% vs 69.7%, p=0.07), have an increased LOS (8.8 vs 6.8 days, p=0.007) and require supplementation with a PCA (66.8% vs 30%, p=0.002). TE failure was also associated with increased narcotics utilization (231 vs 80 oral morphine equivalents, p=0.0085), but did not impact pain scores during the immediate postoperative course.
Conclusions: The risk and cost of TE failure are high and may compromise the ERAS mission. The value of TEs in comparison to alternative loco-regional blocks on ERAS needs to be prospectively evaluated.

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Poster #36

Tumor vs stroma: Understanding the Role of Discoidin Domain Receptor 2 (DDR2) in ovarian cancer metastasis, chemoresistance, and survival (Final version - please disregard first submission that exceeded character limit)

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Objectives: The purpose of this study is to show that discoidin domain receptor 2 (DDR2) expression is critical in ovarian cancer metastasis and predictive of chemoresistance and poor survival.