Background
PI3K/AKT/mTOR pathway is frequently altered in breast cancer. PIK3CA mutations have been described in up to 40% of luminal breast carcinomas. Mutations located in two hotspots in exons 9 and 20 (codons 545, 546 and 1074) account for more than 85% of all point mutations in this gene. PIK3CA alterations have been shown to be related with endocrine therapy resistance.

Methods
We have searched for mutations on PIK3CA exons 9 and 20 in a set of 166 luminal, treatment-naive, breast cancer cases. DNA was extracted from paraffin embedded tissue from the primary tumor. We used a pyrosequencing protocol previously published by Nosho et al. We reviewed current literature on early breast cancer and systemic therapy resistance.

Pyrosequencing protocol (Nosho et al)
Primer covering positions...

<table>
<thead>
<tr>
<th>EXON 9</th>
<th>EXON 20</th>
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</thead>
<tbody>
<tr>
<td>c.1634A&gt;G</td>
<td>c.3129G&gt;T</td>
</tr>
<tr>
<td>c.1636C&gt;A</td>
<td>c.3139C&gt;T</td>
</tr>
<tr>
<td>c.1633G&gt;A</td>
<td>c.3140A&gt;T</td>
</tr>
<tr>
<td>c.1624G&gt;A</td>
<td>c.3140A&gt;G</td>
</tr>
</tbody>
</table>

50 cycles:
94°C for 20 seconds
50°C for 20 seconds
74°C for 40 seconds
Final extension: 72°C 1 min

pPCR 81bp (exon 9)
pPCR 74-bp (exon 20)

Results
26.5% (44 samples) of all the cases in our series was mutant for either exons 9 or 20. Mutation distribution showed codon 1074, exon 20, as the most frequently mutated (16.87%). H1047R was the most common change seen. PIK3CA mutations have been commonly considered an acquired resistance mechanism to endocrine therapy. Its importance on early breast cancer development and treatment selection has not been deeply explored.

Conclusions
PIK3CA mutations are common in luminal breast cancer. These changes also occur among treatment-naïve patients. The role of such alterations in the natural history of the disease and its role on primary resistance to endocrine therapy remains to be determined.