Topline Results Phase 3
MANIFEST-2 Study

Pelabresib in First-Line Myelofibrosis

November 2023
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The compounds discussed in this slide presentation are investigational products being developed by MorphoSys and its partners and are not currently approved by the U.S. Food and Drug Administration (FDA), European Medicines Agency (EMA) or any other regulatory authority (except for tafasitamab/Monjuvi® and tafasitamab/Minjuvi® in relapsed or refractory DLBCL). The safety and efficacy of these investigational products have not been established and there is no guarantee any investigational product will be approved by regulatory authorities.

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Agenda

01 Opening Remarks
Jean-Paul Kress, M.D., Chief Executive Officer (CEO)

02 Phase 3 MANIFEST-2 Study Topline Results
Tim Demuth, M.D., Ph.D., Chief Research & Development Officer (CR&DO)

03 Myelofibrosis in Clinical Practice
John Mascarenhas, M.D., Professor of Medicine and Director of the Adult Leukemia Program at The Tisch Cancer Institute at Mount Sinai, New York

04 Q&A
Jean-Paul Kress, M.D., Tim Demuth, M.D., Ph.D., Lucinda Crabtree, Ph.D., John Mascarenhas, M.D.
MANIFEST-2 Study Results Demonstrate Most Impressive Benefits Seen in Clinical Studies of Patients with Myelofibrosis

KEY FINDINGS

• Achieved primary endpoint, nearly doubling SVR35

• Significant improvements in key secondary endpoints (absolute change in TSS and TSS50) for intermediate-risk patients

• Strong positive trend in key secondary endpoints for overall population

• Clinically meaningful anemia improvement

• Safety results consistent with prior trials, no new safety signals

NEXT STEPS

Present detailed findings at 2023 ASH Annual Meeting

Submit for approval in the U.S. and Europe mid-2024

Pelabresib is an investigational medicine that has not yet been approved by any regulatory authorities.
Phase 3 MANIFEST-2 Study: One of the Largest Myelofibrosis Studies Ever Conducted

430 JAK-inhibitor-naïve myelofibrosis patients randomized, representative of the disease population and aligned with NCCN criteria

<table>
<thead>
<tr>
<th>KEY ENDPOINTS</th>
<th>ADDITIONAL ENDPOINTS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY: SVR35 at week 24</td>
<td>Duration of the splenic response</td>
</tr>
<tr>
<td>SECONDARY: Absolute change in TSS at week 24</td>
<td>Duration of the symptom response</td>
</tr>
<tr>
<td>TSS50 at week 24 (MFSAF v4.0)</td>
<td>Improvement in bone marrow fibrosis</td>
</tr>
<tr>
<td></td>
<td>Hemoglobin response</td>
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<tr>
<td></td>
<td>Progression-free survival</td>
</tr>
<tr>
<td></td>
<td>Overall survival</td>
</tr>
</tbody>
</table>

SVR35, ≥35% reduction in spleen volume; TSS, total symptom score; TSS50, ≥50% reduction in total symptom score; MFSAF, Myelofibrosis Symptom Assessment Form

*Only includes sample of additional endpoints being assessed in Phase 3 MANIFEST-2 study

© MorphoSys – Topline Results: Phase 3 MANIFEST-2 Study
**Statistically Significant and Clinically Meaningful Improvement in Primary Endpoint: SVR35**

<table>
<thead>
<tr>
<th>POPULATION</th>
<th>SVR35 (Pelabresib + Ruxolitinib)</th>
<th>SVR35 (Ruxolitinib + Placebo)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients (N = 430)</td>
<td>66%</td>
<td>35%</td>
<td>30.4%*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P-value: p&lt;0.001</td>
</tr>
<tr>
<td>Intermediate-Risk (DIPSS Int-1 &amp; 2)</td>
<td>66%</td>
<td>36%</td>
<td>29.9%*</td>
</tr>
<tr>
<td>(N = 400)</td>
<td></td>
<td></td>
<td>P-value: p&lt;0.001</td>
</tr>
<tr>
<td>High-Risk (DIPSS) (N = 30)</td>
<td>64%</td>
<td>25%</td>
<td>39.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P-value: 0.063</td>
</tr>
</tbody>
</table>

*Difference calculated using Cochran–Mantel–Haenszel (CMH) common risk difference*
### Strong Positive Trend in Key Secondary Endpoints: Absolute Change in TSS and TSS50

<table>
<thead>
<tr>
<th>POPULATION</th>
<th>Absolute Change in TSS (Pelabresib + Ruxolitinib)</th>
<th>Absolute Change in TSS (Ruxolitinib + Placebo)</th>
<th>Difference</th>
<th>TSS50 (Pelabresib + Ruxolitinib)</th>
<th>TSS50 (Ruxolitinib + Placebo)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Patients</strong> (N = 430)</td>
<td>-15.99</td>
<td>-14.05</td>
<td>-1.94*</td>
<td>52%</td>
<td>46%</td>
<td>6.0%***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P-value: 0.0545</td>
<td></td>
<td></td>
<td>P-value: 0.216</td>
</tr>
<tr>
<td><strong>Intermediate-Risk (DIPSS Int-1 &amp; 2)</strong> (N = 400)</td>
<td>-15.18</td>
<td>-12.74</td>
<td>-2.4*</td>
<td>55%</td>
<td>45%</td>
<td>10.05%***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P-value: &lt;0.02</td>
<td></td>
<td></td>
<td>P-value: &lt;0.05</td>
</tr>
<tr>
<td><strong>High-Risk (DIPSS)</strong> (N = 30)</td>
<td>N/A**</td>
<td>N/A**</td>
<td>N/A**</td>
<td>21%</td>
<td>69%</td>
<td>-47.3%</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>P-value: &lt;0.05</td>
</tr>
</tbody>
</table>

*Least square mean estimate; **No calculation due to missing data rate; ***Difference calculated using Cochran–Mantel–Haenszel (CMH) common risk difference

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Myelofibrosis in Clinical Practice

JOHN MASCARENHAS, M.D.
Professor of Medicine and Director of the Adult Leukemia Program
at The Tisch Cancer Institute at Mount Sinai, New York

© MorphoSys – Topline Results: Phase 3 MANIFEST-2 Study
Myelofibrosis is a Debilitating, Progressive and Often Deadly Blood Cancer, Characterized by Four Hallmarks

1. Enlarged Spleen
2. Anemia
3. Bone Marrow Fibrosis
4. Constitutional Symptoms

**DIAGNOSIS (DIPSS)**
- Intermediate-risk: ~77% – 86%
- High-risk: ~9% – 11%

**MEDIAN OVERALL SURVIVAL (DIPSS)**
- Intermediate-risk: ~4 – 14.2 years
- High-risk: ~1.5 years

Passamonti, F et al. Blood 2010
Survival Improves With Spleen Length Reduction in Patients Receiving Ruxolitinib

For <25% vs ≥50% spleen length reduction:
HR: 0.22 (95% CI: 0.10–0.51; P = .0001)

PROBABILITY OF OS

MONTHS

≥50% spleen length reduction (n = 61)
<25% spleen length reduction (n = 23)
≥25% but <50% spleen length reduction (n = 13)

The RR6 model was validated in another cohort of patients (n = 40; $P = 0.0276$) treated with ruxolitinib at Moffitt Cancer Center.

**Risk Factors**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Multivariate, HR (95% CI); $P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUX dose below 20 mg BID at baseline, 3 months and 6 months</td>
<td>HR = 1.79 (1.07-3.00); $P = 0.03$</td>
</tr>
<tr>
<td>Splenomegaly reduction ≤30% by palpation at 3 months and 6 months</td>
<td>HR = 2.26 (1.40-3.65); $P = 0.0009$</td>
</tr>
<tr>
<td>RBC transfusion need at baseline, 3 months and 6 months</td>
<td>HR = 2.32 (1.19-4.54); $P = 0.02$</td>
</tr>
</tbody>
</table>

MANIFEST-2 Provides Valuable Evidence, Cementing Position of Pelabresib and Ruxolitinib Combination Potential

1. **BET inhibition** is rational and supported by pre-clinical data

2. **Combination of pelabresib and ruxolitinib** is clinically active
   - SVR35 statistically significant and clinically meaningful in overall population
   - Strong numerical improvement in symptom reduction, significant improvement in intermediate-risk patients

3. **Well-tolerated** therapy
   - Safety results consistent with prior trials, no new safety signals

4. **Correlative evidence of biologic disease modification**
   - Hemoglobin level improvement
   - Anemia AE improvement

5. **Paradigm Shift – Combination Therapy:**
   - Support use of combination treatment
   - Start early to prevent patients getting more ill
Pelabresib and Ruxolitinib Combination Therapy: Potential to Shift Treatment Paradigm in Myelofibrosis

Most Impressive Benefits Seen in Myelofibrosis

File for Approval in the U.S. and Ex-U.S.

Multi-Billion Dollar Market Opportunity
Thank you!

www.MorphoSys.com