To estimate the **Potential Peak Sales** for ripretinib (QINLOCK) in the indication of advanced gastrointestinal stromal tumor (GIST) in the US, EU5 (Germany, France, Italy, Spain, UK), China, and Japan, as well as the **$ value of a 1% share of treated patients** in these geographies, we need to follow a structured approach based on available data and reasonable assumptions. Since exact figures (e.g., patient population, pricing, or market penetration) are not provided, I will outline the methodology and use illustrative numbers based on industry standards and publicly available information on GIST and ripretinib. You can refine these numbers with specific data if available.

Step 1: Define Key Parameters

1. **Indication**: Ripretinib is approved for adult patients with advanced GIST who have received prior treatment with 3 or more kinase inhibitors, including imatinib. This is a specific, late-line treatment population (4th line or beyond).

2. **Target Geographies**: US, EU5 (Germany, France, Italy, Spain, UK), China, Japan.

3. **Market Share Assumption**: 20% to 30% of treated patients in this indication.

4. **Peak Sales**: The maximum annual revenue a drug achieves at the height of its market penetration, typically a few years after launch, before generics or competition erode sales.

5. **Pricing and Treatment Duration**: Ripretinib's pricing and duration of therapy will vary by region due to differences in healthcare systems and reimbursement policies.

Step 2: Estimate the Eligible Patient Population

GIST is a rare cancer, and the subset of patients who progress to 4th-line treatment after failing 3 or more kinase inhibitors (including imatinib) is even smaller. Below are rough estimates of the eligible population based on epidemiology data and treatment progression rates:

- **US**:

- Annual GIST incidence: ~4,000–6,000 new cases.

- Advanced GIST requiring systemic treatment: ~50% of cases.

- Patients progressing to 4th-line therapy: ~10–15% of advanced cases (due to high attrition after earlier lines of therapy).

- Eligible population: ~200–450 patients annually.

- **EU5**:

- Combined population is roughly similar to the US in terms of GIST incidence per capita.

- Eligible population: ~250–500 patients annually.

- **China**:

- Much larger population, but lower diagnosis rates and access to advanced therapies.

- Annual GIST incidence: ~20,000–30,000 new cases.

- Eligible population (4th-line, considering access barriers): ~500–1,000 patients annually.

- **Japan**:

- Smaller population, but high diagnosis and treatment rates.

- Eligible population: ~100–200 patients annually.

Total Eligible Population (across all geographies): ~1,050–2,150 patients annually.

Step 3: Estimate Pricing and Treatment Duration

Ripretinib is a specialty oncology drug, and pricing for such therapies is high, especially in the US. Treatment duration for advanced GIST patients in late-line settings is often limited by disease progression or tolerability, typically ranging from 6–12 months.

- **US Pricing**: Ripretinib's annual cost is approximately $250,000–$300,000 per patient (based on reported figures for QINLOCK, ~$32,000/month for a 150 mg daily dose).

- **EU5 Pricing**: Typically 30–50% lower than the US due to price controls and negotiations. Estimated annual cost: $125,000–$150,000 per patient.

- **China Pricing**: Significantly lower due to affordability and market access programs. Estimated annual cost: $50,000–$75,000 per patient.

- **Japan Pricing**: Similar to EU5, ~$125,000–$150,000 per patient.

Average Treatment Duration: Assume 8 months of therapy on average (based on progression-free survival data from the INVICTUS trial, which showed a median PFS of ~6.3 months for ripretinib).

Annual Cost per Patient (Adjusted for Duration):

- US: ~$166,000–$200,000 (8/12 of annual cost).

- EU5: ~$83,000–$100,000.

- China: ~$33,000–$50,000.

- Japan: ~$83,000–$100,000.

Step 4: Calculate Potential Peak Sales (20%–30% Market Share)

Assuming ripretinib captures 20%–30% of the eligible treated population in each geography, we calculate peak sales as follows:

US

- Eligible patients: 200–450.

- Treated patients (20%–30% share): 40–135.

- Annual cost per patient: $166,000–$200,000.

- Peak Sales: (40 × $166,000) to (135 × $200,000) = **$6.6M–$27M**.

EU5

- Eligible patients: 250–500.

- Treated patients (20%–30% share): 50–150.

- Annual cost per patient: $83,000–$100,000.

- Peak Sales: (50 × $83,000) to (150 × $100,000) = **$4.2M–$15M**.

China

- Eligible patients: 500–1,000.

- Treated patients (20%–30% share): 100–300.

- Annual cost per patient: $33,000–$50,000.

- Peak Sales: (100 × $33,000) to (300 × $50,000) = **$3.3M–$15M**.

Japan

- Eligible patients: 100–200.

- Treated patients (20%–30% share): 20–60.

- Annual cost per patient: $83,000–$100,000.

- Peak Sales: (20 × $83,000) to (60 × $100,000) = **$1.7M–$6M**.

Total Peak Sales Across Geographies:

- Low end: $6.6M (US) + $4.2M (EU5) + $3.3M (China) + $1.7M (Japan) = **$15.8M**.

- High end: $27M (US) + $15M (EU5) + $15M (China) + $6M (Japan) = **$63M**.

Potential Peak Sales Range: **$16M–$63M annually**.

Step 5: Calculate $ Value of 1% Share of Treated Patients

A 1% share of treated patients corresponds to 1% of the eligible population being treated with ripretinib. Using the same patient numbers and cost per patient:

US

- Eligible patients: 200–450.

- 1% share: 2–4.5 patients.

- Annual cost per patient: $166,000–$200,000.

- Value of 1% share: (2 × $166,000) to (4.5 × $200,000) = **$332,000–$900,000**.

EU5

- Eligible patients: 250–500.

- 1% share: 2.5–5 patients.

- Annual cost per patient: $83,000–$100,000.

- Value of 1% share: (2.5 × $83,000) to (5 × $100,000) = **$207,500–$500,000**.

China

- Eligible patients: 500–1,000.

- 1% share: 5–10 patients.

- Annual cost per patient: $33,000–$50,000.

- Value of 1% share: (5 × $33,000) to (10 × $50,000) = **$165,000–$500,000**.

Japan

- Eligible patients: 100–200.

- 1% share: 1–2 patients.

- Annual cost per patient: $83,000–$100,000.

- Value of 1% share: (1 × $83,000) to (2 × $100,000) = **$83,000–$200,000**.

Total Value of 1% Share Across Geographies:

- Low end: $332K (US) + $207.5K (EU5) + $165K (China) + $83K (Japan) = **$787,500**.

- High end: $900K (US) + $500K (EU5) + $500K (China) + $200K (Japan) = **$2.1M**.

$ Value of 1% Share Range: **$0.8M–$2.1M annually**.

Final Answer

1. **Potential Peak Sales for Ripretinib** (assuming 20%–30% market share):

- **US, EU5, China, Japan Combined**: **$16M–$63M annually**.

2. **$ Value of 1% Share of Treated Patients**:

- **US, EU5, China, Japan Combined**: **$0.8M–$2.1M annually**.

Caveats and Notes

- These estimates are based on rough approximations of patient populations, pricing, and treatment duration. Actual figures may vary due to differences in market access, reimbursement, competition, and real-world treatment patterns.

- Ripretinib’s peak sales could be influenced by label expansions, additional indications, or competition from other therapies in GIST.

- If you have access to specific data (e.g., exact patient numbers, pricing in each region, or market share projections), these estimates can be refined further.