It takes more than just a single target
As the challenges you face evolve...

**HIV mutates**

“No HIV-1 mutation can be considered to be neutral”¹

- Growing evidence indicates all HIV subtypes may be prone to errors; posing enormous challenges to viral load monitoring.²

- HIV-1 diversity is increasing and recombinants of greater complexity are being created.¹,³
  - Produces $10^{10}$ virions / day.⁴
  - Creates a polymorphism every 2,000–5,000 nucleotides.⁴

- Drug pressure and polymorphisms can lead to RT-PCR inefficiency.²,³,⁵–⁷

- Mismatches and mutations unseen by single target assays can lead to underquantification.³,⁶

*Underquantification can have major clinical repercussions; delaying the detection of drug resistance²,³*
Treatments evolve

Newer classes of medications change treatment regimens

- European, US and International guidelines recommend integrase inhibitors for 1st line therapy.\(^3,9,25\)
- In 2012, the use of raltegravir increased 25\%.\(^10\)
- The integrase gene is an attractive target for drug development.\(^11\)
  - Raltegravir is approved for global use.
  - Elvitegravir is approved for use in the US and is under review in Europe.
  - Dolutegravir under regulatory review in the US, Europe, and Japan.
  - Additional compounds are in development.

Drug resistance remains a central problem

- Associated with all antiretrovirals, including integrase inhibitors.\(^12-15\)
- Over 42 mutations are associated with resistance to raltegravir.\(^16,17\)

Selective pressure on a drug target has the potential to compromise treatment efficacy.\(^11\)
So does Roche and the support we provide.

Two targets

“Represents an important step forward”

- Targeting two regions improves genotype inclusivity, detects HIV-1 variants and potentially avoids underquantification.

- 30 samples not quantified by the single target assay were quantified by the Roche dual target HIV-1 assay.

- The single target comparator assay quantified 19% of samples significantly lower than the Roche dual target HIV-1 assay.

- Amplification of a less ideal target region might explain discrepancies already observed in the literature.

Accurately quantifying HIV-1 RNA with a dual target assay contributes to optimal treatment decisions for patient management.


**Superior sensitivity**

“Evolution of viral resistance can occur in the setting of low-level viremia”\(^8,11\)

- Two clinical trials and a cohort analysis detected new resistance mutations in 37% and 65% respectively of patients who had developed persistent low-level viremia.\(^8,20,21\)
- Viremia between 20-49 RNA copies/mL have been associated with higher baseline viral load and less time on ART.\(^22,23\)
- Quantifying HIV-1 viremia between 20-49 copies/mL may have value.\(^19,22\)

*Sensitive assays provide insight into disease awareness, assist in research eradication efforts, and may lead to improvements in disease management for patients living with the HIV-1 virus*\(^3,18\)
**Stay one step ahead**

*With the COBAS® AmpliPrep/COBAS TaqMan® HIV-1 Test v2.0 and the COBAS TaqMan® HIV-1 Test, v2.0 for use with the High Pure System*

**Performance for today; prepared for tomorrow**

It takes more than just a single target to stay ahead of HIV-1. A diversified approach includes multiple safeguards, such as a dual target and increased sensitivity, providing confidence in test results for patients living with the HIV-1 virus.\(^{2,5,22-24}\)

---

\(^{2}\)This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clinical management of HIV-1 infected patients. The test can be used to assess patient prognosis by measuring the baseline HIV-1 RNA level or to monitor the effects of antiretroviral therapy by measuring changes in EDTA plasma HIV-1 RNA levels during the course of antiretroviral treatment.
References:

10. Annual Report, Merck & CO., INC. Franchise / Key Product Sales, September Year-To-Date 2012, Table 3b.
22. Pascual-Pareja JF et al. Detection of HIV-1 at between 20 and 49 copies per millilter with the Cobas TaqMan HIV-1 v2.0 assay is associated with higher pretherapy viral load and less time on antiretroviral therapy. J Clin Microbiol. 2010; 48: 1911-1912.