Correction: *Key differences between 13 KRAS mutation detection technologies and their relevance for clinical practice*

Sherwood JL, Brown H, Rettino A, *et al*. Key differences between 13 KRAS mutation detection technologies and their relevance for clinical practice. *ESMO Open* 2017;2:e000235. 10.1136/esmoopen-2017-000235

Tables 3A and 3B have been amended to reflect the error in the use of reagents by the third-party laboratory (IMGM, Munich) for the ddPCR Q61H assay (see appendix). The therascreen® KRAS RGQ PCR Kit Q61 assay does not test for Q61H; the PrimePCR™ ddPCR™ Mutation Assay was not performed for Q61H due to an error at the participating laboratory. This was identified after publication, as referred to in the Letter to the Editor (http://dx.doi.org/10.1136/esmoopen-2017-000294). A new abbreviation "NP" = "not performed" has been added to explain that no ddPCR assay for codon Q61 was performed.

In the abstract, the corrected sentence now reflects a lower number of total data points (718 instead of 728) because of the removal of 5 data points for ddPCR p.Q61H mutation results for 100 mutant copies input and 5 data points for 50 mutant copies input, respectively. Overall 406/718 data points across all 13 technologies were identified correctly. The digital PCR assay (KRAS PrimePCR™ ddPCR™, Bio-Rad Laboratories) identified 70% (100 copies) and 65% (50 copies) of samples correctly.

The ddPCR results section is corrected to reflect that for codon Q61H, the incorrect PrimePCR™ KRAS mutation assay had been used (p.Q61H c.183A>C instead of p.Q61H c.183A>T assay): The PrimePCR ddPCR KRAS Mutation Assays were able to identify codon 12 and 13 mutations down to 1% with the 100 copy input. However, across both admixture and wild-type control samples the assay identified the incorrect mutation in nine different mutation/allele frequency combinations (see table 3). When performing the p.Q61H assay, a mistake was made and the incorrect reagent detection of c.183A>C instead of c.183A>T, was used. Therefore, table 3 and figure 1 reflect data only for codons 12 and 13.

ESMO Open 2017;**3**:e000235corr1. doi:10.1136/esmoopen-2017-000235corr1

Table 3 *KRAS* mutation detection success by codon, concentration and technology for (A.) 100 mutant copies input, (B.) 50 mutant copies input and (C.) wild-type only.

(A)

		Real-time Quantitative PCR			MALDI-TOF		Next Generation Sequencing					Droplet Digital PCR	Sanger Capillary Sequencing
	Nominal total copies of WT DNA	therascreen® *KRAS* RGQ PCR Kit	cobas® *KRAS* Mutation test	Idylla™ *KRAS* Mutation Test (Point of care)	iPlex® Pro	UltraSEEK™	Thunderbolts™	Oncomine™ Focus Assay	Sentosa® SQ NSCLC Panel	Ion AmpliSeq™ Cancer Hotspot panel v2	Trusight® Tumor 15	PrimePCR ddPCR Mutation Assays *KRAS*	ABI3730 Sequencing
p.G12C	20	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 14.3%	✓ MD 20.5%	✓ MD 11.1%	x NMD	*X* IMD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 4.7%	✓ MD 6.6%	✓ MD 5.7%	✓ MD 5.7%	✓ MD 4.8%	✓ MD	✓ NMD
	5	✓ MD	✓ NMD	✓ MD	✓ MD	✓ MD	✓ MD 3.7%	✓ MD 2.4%	✓ NMD 3.1%	✓ MD 2.6%	✓ MD 2.7%	✓ MD	✓ NMD
	1	✓ NMD	✓ NMD	✓ MD	✓ MD	✓ MD	✓ NMD	✓ MD 0.5%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.3%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	x NMD	✓ NMD
p.G12D	20	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 17.2%	✓ MD 19.6%	✓ MD 25.6%	✓ MD 27.5%	✓ MD 31.1%	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 11.4%	✓ MD 11.8%	✓ MD 14.3%	✓ MD 13.2%	x NMD	✓ MD	✓ NMD
	5	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 7.6%	✓ MD 5.8%	✓ MD 6.7%	✓ MD 5.1%	✓ MD 7.3%	✓ MD	✓ NMD
	1	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ MD 1.5%	✓ MD 1.2%	✓ NMD -	✓ MD 1.0%	✓ MD 1.6%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.6%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	x NMD	✓ NMD
p.G13D	20	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 13.9%	✓ MD 14.6%	✓ MD 10.4%	x NMD	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 2.7%	✓ MD 7.4%	✓ MD 7.7%	✓ MD 8.6%	✓ MD 6.4%	✓ MD	✓ NMD
	5	✓ NMD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 3.9%	✓ MD 3.1%	✓ MD 4.6%	✓ MD 1.6%	✓ MD 3.8%	✓ MD	✓ NMD
	1	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.9%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	x NMD	✓ MD 0.4%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	x NMD	✓ NMD
p.G12V	20	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 30.6%	✓ MD 39.4%	✓ MD 27.8%	x NMD	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 5.9%	✓ MD 16.2%	✓ MD 24.5%	✓ MD 15.6%	✓ MD 13.6%	x IMD	✓ NMD
	5	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 6.1%	✓ MD 8.1%	✓ MD 9.6%	✓ MD 8.3%	✓ MD 8.5%	✓ MD	✓ NMD
	1	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ NMD	✓ MD 1.3%	✓ NMD 1.6%	✓ MD 1.4%	✓ MD 1.5%	✓ MD	✓ NMD
	0.5	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 1.0%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	x NMD	✓ NMD
p.Q61H	20	NA	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 6.3%	✓ MD 7.8%	✓ MD 1.1%	x NMD	NP	✓ NMD
	10	NA	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ MD 2.3%	✓ MD 2.7%	✓ NMD 2.4%	✓ MD 3.0%	✓ MD 4.3%	NP	✓ NMD
	5	NA	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 1.2%	✓ NMD 2.5%	✓ MD 1.8%	✓ MD 1.5%	NP	✓ NMD
	1	NA	✓ NMD	✓ MD	✓ NMD	✓ NMD	✓ NMD	✓ MD 0.2%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	NP	✓ NMD
	0.5	NA	✓ NMD	✓ MD	✓ NMD	✓ NMD	✓ NMD	✓ MD 0.1%	✓ NMD -	✓ NMD 0.0%	✓ NMD 0.0%	NP	✓ NMD

Continued

Table 3 Continued

(B)

		Real-time Quantitative PCR			MALDI-TOF		Next Generation Sequencing					Droplet Digital PCR	Sanger Capillary Sequencing
	Nominal total copies of WT DNA	therascreen® *KRAS* RGQ PCR Kit	cobas® *KRAS* Mutation test	Idylla™ *KRAS* Mutation Test (Point of care)	iPlex® Pro	UltraSEEK™	Thunderbolts™	Oncomine™ Focus Assay	Sentosa® SQ NSCLC Panel	Ion AmpliSeq™ Cancer Hotspot panel v2	Trusight® Tumor 15	PrimePCR ddPCR Mutation Assays *KRAS*	ABI3730 Sequencing
p.G12C	20	x NMD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 10.8%	✓ MD 19.8%	✓ MD 13.1%	x NMD	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ NMD	✓ MD	x NMD	✓ MD 5.8%	✓ MD 6.3%	✓ MD 7.1%	x NMD	✓ MD	✓ NMD
	5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ MD 2.1%	✓ MD 2.9%	✓ MD 3.3%	✓ MD 1.9%	✓ MD 3.6%	✓ MD	✓ NMD
	1	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.6%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.4%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	x IMD	✓ NMD
p.G12D	20	x NMD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 22.0%	✓ MD 16.6%	✓ MD 23.2%	x NMD	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 9.3%	✓ MD 11.5%	✓ MD 18.4%	✓ MD 8.4%	✓ MD 9.7%	✓ MD	✓ NMD
	5	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 5.0%	✓ MD 5.0%	✓ MD 5.2%	✓ MD 7.6%	✓ MD 6.7%	✓ MD	✓ NMD
	1	✓ NMD	✓ NMD	✓ MD	✓ MD	✓ MD	✓ NMD	✓ MD 1.2%	✓ NMD 2.2%	✓ MD 1.9%	✓ NMD 0.0%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.3%	✓ NMD –	✓ MD 1.2%	✓ NMD 0.0%	x IMD	✓ NMD
p.G13D	20	x NMD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 13.0%	✓ MD 6.5%	✓ MD 15.5%	x NMD	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 6.6%	✓ MD 6.6%	✓ MD 6.1%	✓ MD 2.7%	x IMD	✓ NMD
	5	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 2.8%	✓ MD 2.9%	✓ NMD 2.5%	✓ MD 2.0%	✓ MD 2.6%	✓ MD	✓ NMD
	1	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.8%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	✓ MD	✓ NMD
	0.5	✓ NMD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.4%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	x IMD	✓ NMD
p.G12V	20	x NMD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 34.3%	✓ MD 46.9%	✓ MD 29.6%	✓ MD 26.1%	✓ MD	✓ NMD
	10	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 17.3%	✓ MD 13.9%	✓ MD 15.3%	x NMD	x IMD	✓ NMD
	5	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD	✓ MD 5.1%	✓ MD 8.5%	✓ MD 12.2%	✓ MD 7.0%	✓ MD 10.8%	x IMD	✓ NMD
	1	✓ MD	✓ NMD	✓ MD	✓ MD	✓ MD	✓ NMD	✓ MD 1.7%	✓ NMD –	✓ MD 1.8%	✓ MD 1.8%	x IMD	✓ NMD
	0.5	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 0.8%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	✓ MD	✓ NMD
p.Q61H	20	NA	✓ MD	✓ NMD	✓ MD	✓ MD	x NMD	✓ MD 6.0%	✓ MD 10.3%	✓ MD 4.5%	x NMD	NP	✓ NMD
	10	NA	✓ MD	✓ MD	✓ MD	✓ MD	x NMD	✓ MD 2.0%	✓ NMD 2.8%	✓ MD 3.7%	x NMD	NP	✓ NMD
	5	NA	✓ NMD	✓ MD	✓ NMD	✓ MD	✓ NMD	✓ MD 1.7%	✓ NMD –	✓ MD 1.6%	✓ NMD 0.0%	NP	✓ NMD
	1	NA	✓ NMD	✓ NMD	✓ NMD	✓ NMD	✓ NMD	✓ MD 0.4%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	NP	✓ NMD
	0.5	NA	✓ NMD	✓ MD	✓ NMD	✓ NMD	✓ NMD	✓ MD 0.3%	✓ NMD –	✓ NMD 0.0%	✓ NMD 0.0%	NP	✓ NMD

Continued

Table 3 Continued

(C)

		Real-time Quantitative PCR			MALDI-TOF		Next Generation Sequencing					Droplet Digital PCR	Sanger Capillary Sequencing
	Number of copies	therascreen® *KRAS* RGQ PCR Kit	cobas® *KRAS* Mutation test	Idylla™ *KRAS* Mutation Test (Point of care)	iPlex® Pro	UltraSEEK™	Thunderbolts™	Oncomine™ Focus Assay	Sentosa® SQ NSCLC Panel	Ion AmpliSeq™ Cancer Hotspot panel v2	Trusight® Tumor 15	PrimePCR ddPCR Mutation Assays *KRAS*	ABI3730 Sequencing
	20000	✓wt	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	x NMD	✓ NMD	✓WT
	10000	✓WT	✓wt	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT 0.0%	x NMD	✓WT
	2000	✓WT	✓wt	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT 0.0%	x NMD	✓WT
	1000	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	✓WT	x NMD	✓ NMD	✓WT
	500	✓WT	✓WT	✓WT	✓WT	✓WT	x NMD	✓WT	✓WT	✓WT	x NMD	x NMD	✓WT
	250	✓WT	✓WT	✓WT	✓WT	✓WT	x NMD	✓WT	✓WT	✓WT	x NMD	x NMD	✓WT

✓ MD = analysis successful, mutation detected; ✓NMD = analysis successful, but no mutation detected (in the case of the Sentosa® assay, a mutation was detected but deemed to be below the defined cut-off); ✓WT = analysis successful, wild-type sample; X NMD = analysis unsuccessful, no mutation detected; X IMD = incorrect mutation detected; NA = kit does not assay codon; NP = not performed.
MALDI-TOF, Matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry; PCR, polymerase chain reaction.