

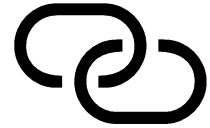


R language applications in archaeology: tool and approach for building an open and reproducible science



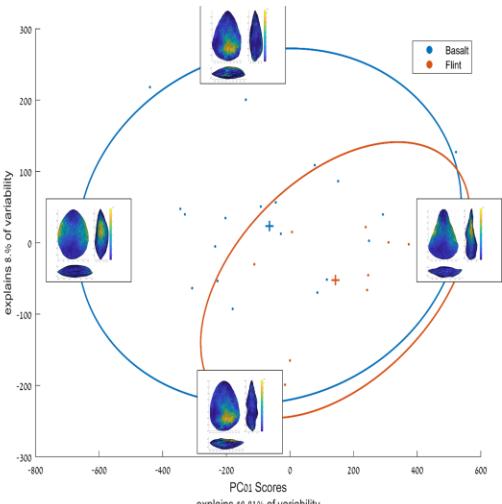
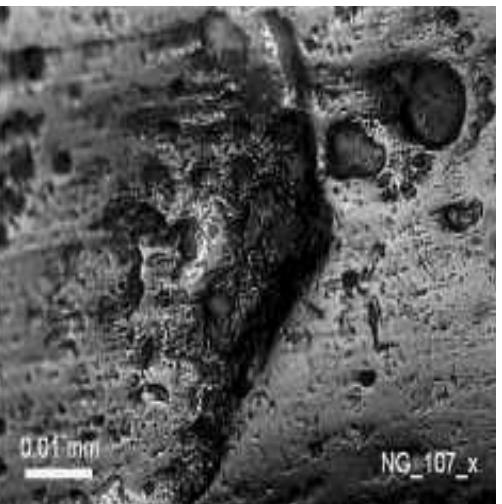
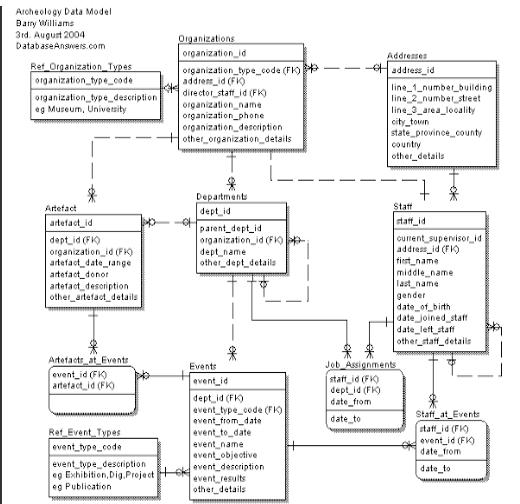
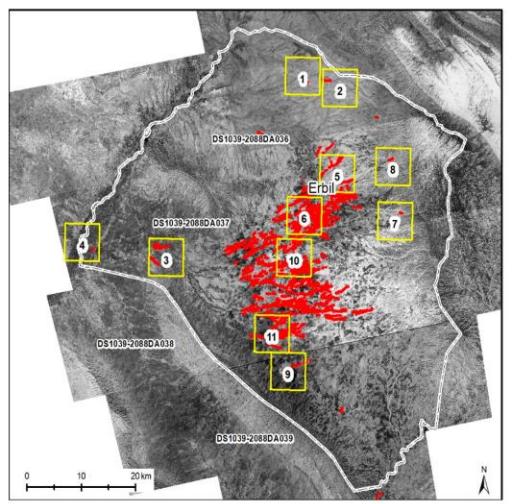
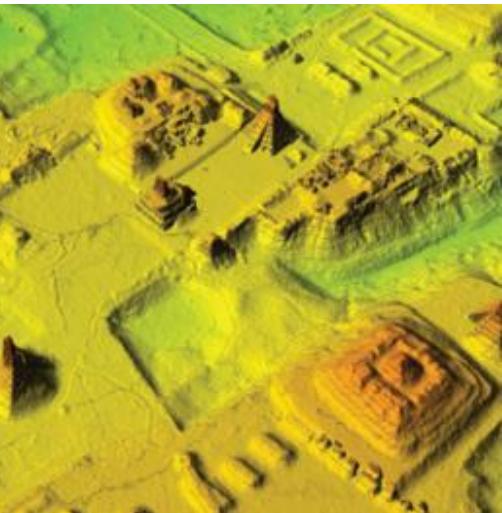
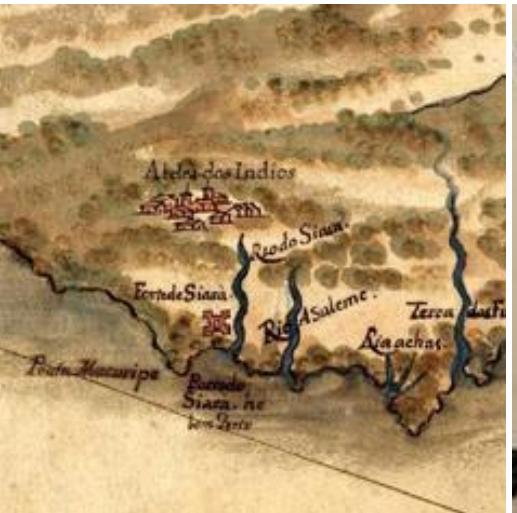
S_ΣR
VI International Seminar
on Statistics with R
May, 25-27, 2022

IGOR PEDROZA
PPGArq | UFPE - DS | UNI7



- Caráter amostral da arqueologia
- A datação arqueológica
- Calibração das idades
- Ciência reproduzível
- Uso do pacote rcarbon
- Sugestões de consulta
- Agradecimentos





SOCIETY

MATERIAL CULTURE

MATERIAL CULTURE

ARCHAEOLOGICAL RECORD

MATERIAL CULTURE

ARCHAEOLOGICAL RECORD

COLLECTION

MATERIAL CULTURE

ARCHAEOLOGICAL RECORD

COLLECTION

ARTIFACTS

MATERIAL CULTURE

ARCHAEOLOGICAL RECORD

COLLECTION

ARTIFACTS

ATTRIBUTES

MATERIAL CULTURE

ARCHAEOLOGICAL RECORD

COLLECTION

ARTIFACTS

ATTRIBUTES

?



Photo: Igor Pedroza – Collection MCSE & IPHAN



Science of sampling the cultural past

Photo: Igor Pedroza – Collection MCSE & IPHAN

Relatório de Análise Radiocarbônica									
COD_LAB	SÍTIO	IDADE	ERRO	AMOSTRA	MÉTODO	TÉCNICA	COORDENADAS		CONTEXTO
							LAT	LONG	
GIF-1234	Papagaio	1.250	40	Carvão	C14	AMS	-4.852365	-35.412514	Urna 17
BETA-4675	Urucum	4.850	30	Concha	C14	Rad	-6.253645	-31.523641	Camada 12
MC-3456	Leteiro	12.560	100	Sementes	C14	Rad	-4.521478	-28.412563	Fogueira 2
DATAÇÃO-123	Passagem	980	120	Cerâmica	TL	SAR	-3.528596	-19.785412	Urna 3

Relatório de Análise Radiocarbônica - MUSEU NACIONAL									
COD_LAB	SÍTIO	IDADE	ERRO	AMOSTRA	MÉTODO	TÉCNICA	COORDENADAS		CONTEXTO
							LAT	LONG	
GIF-1234	Papagaio	1.250	40	Carvão	C14	AMS	-4.852365	-35.412514	Urna 17
BETA-4675	Urucum	4.850	30	Concha	C14	Rad	-6.253645	-31.523641	Camada 12
MC-3456	Letreiro	12.560	100	Sementes	C14	Rad	-4.521478	-28.412563	Fogueira 2
DATAÇÃO-123	Passagem	980	120	Cerâmica	TL	SAR	-3.528596	-19.785412	Urna 3

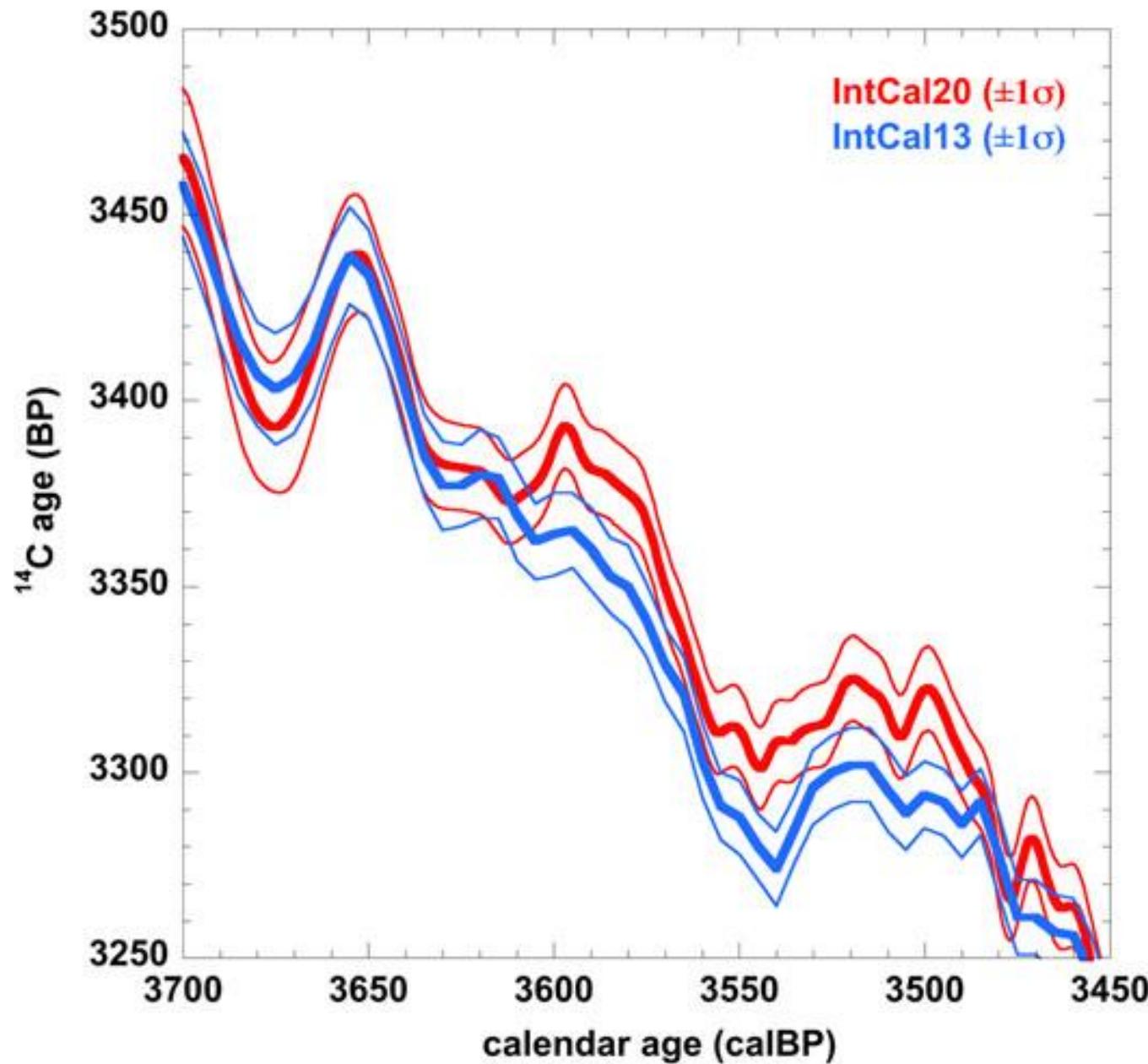
Relatório de Análise Arqueológica									
COD_LAB	SÍTIO	IDADE	ERRO	AMOSTRA	MÉTODO	TÉCNICA	LAT	LONG	CONTEXTO
									PERÍODO MATERIAL TESTE VALOR UNIDADE
GIF-1234	Papagaio	1.250		Carvão			-4.852365	-35.412514	
	Urucum	4.850	30	Concha	C14	Rad			Camada 12
MC-3456		12.560	100	Sementes	C14	Rad			Fogueira 2
	Passagem	980	120	Cerâmica	TL	SAR	-3.528596	-19.785412	

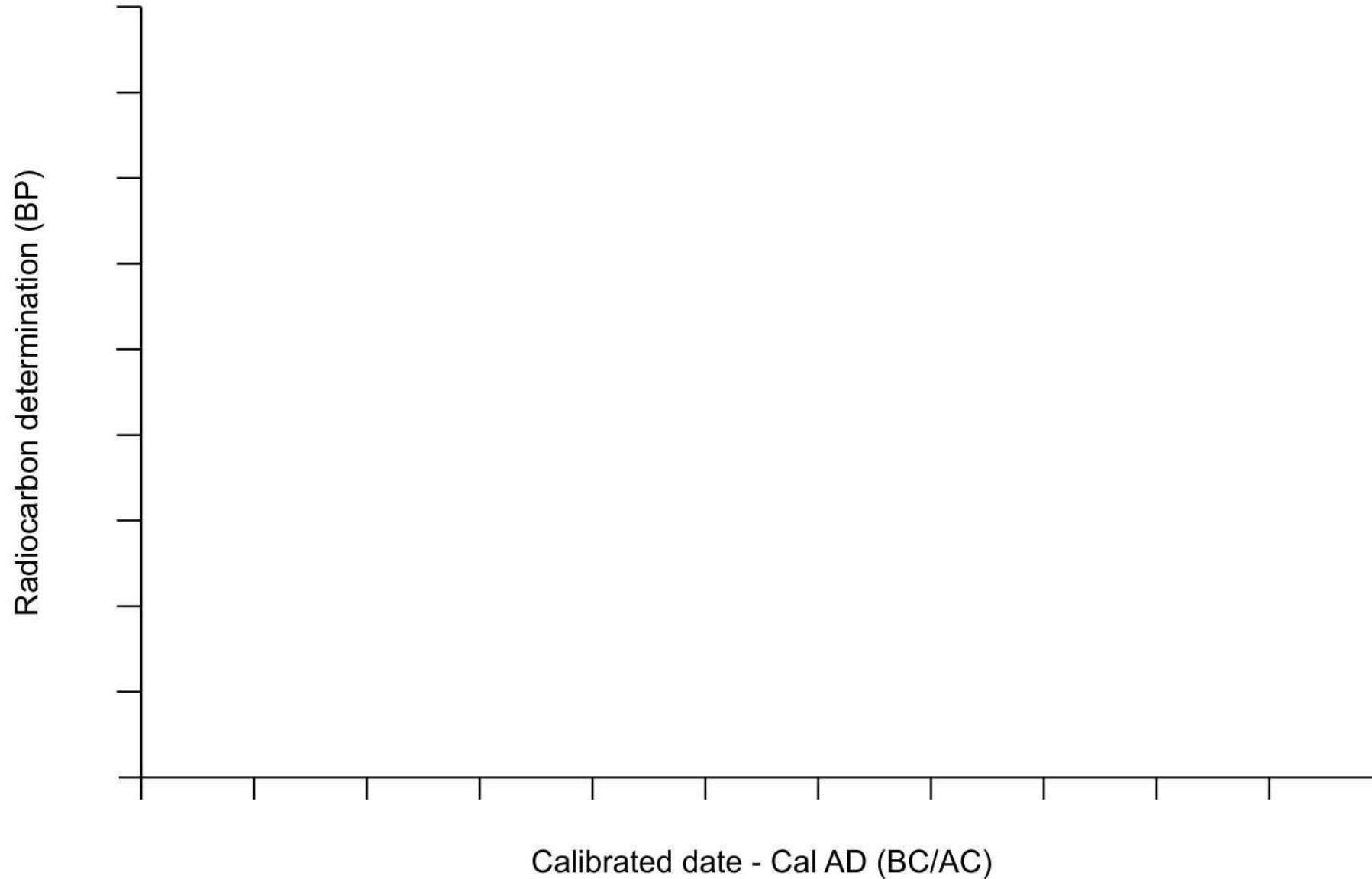


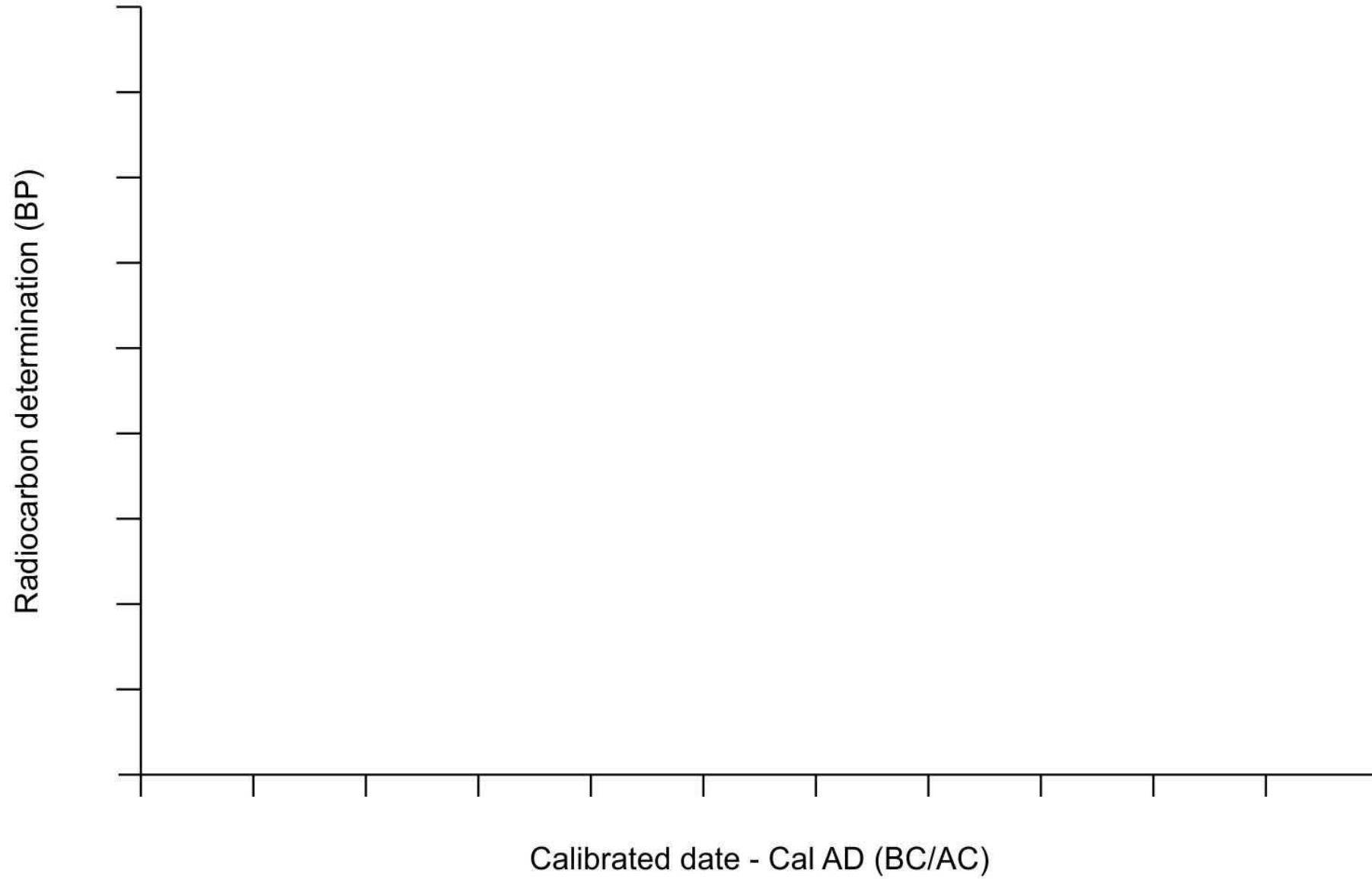






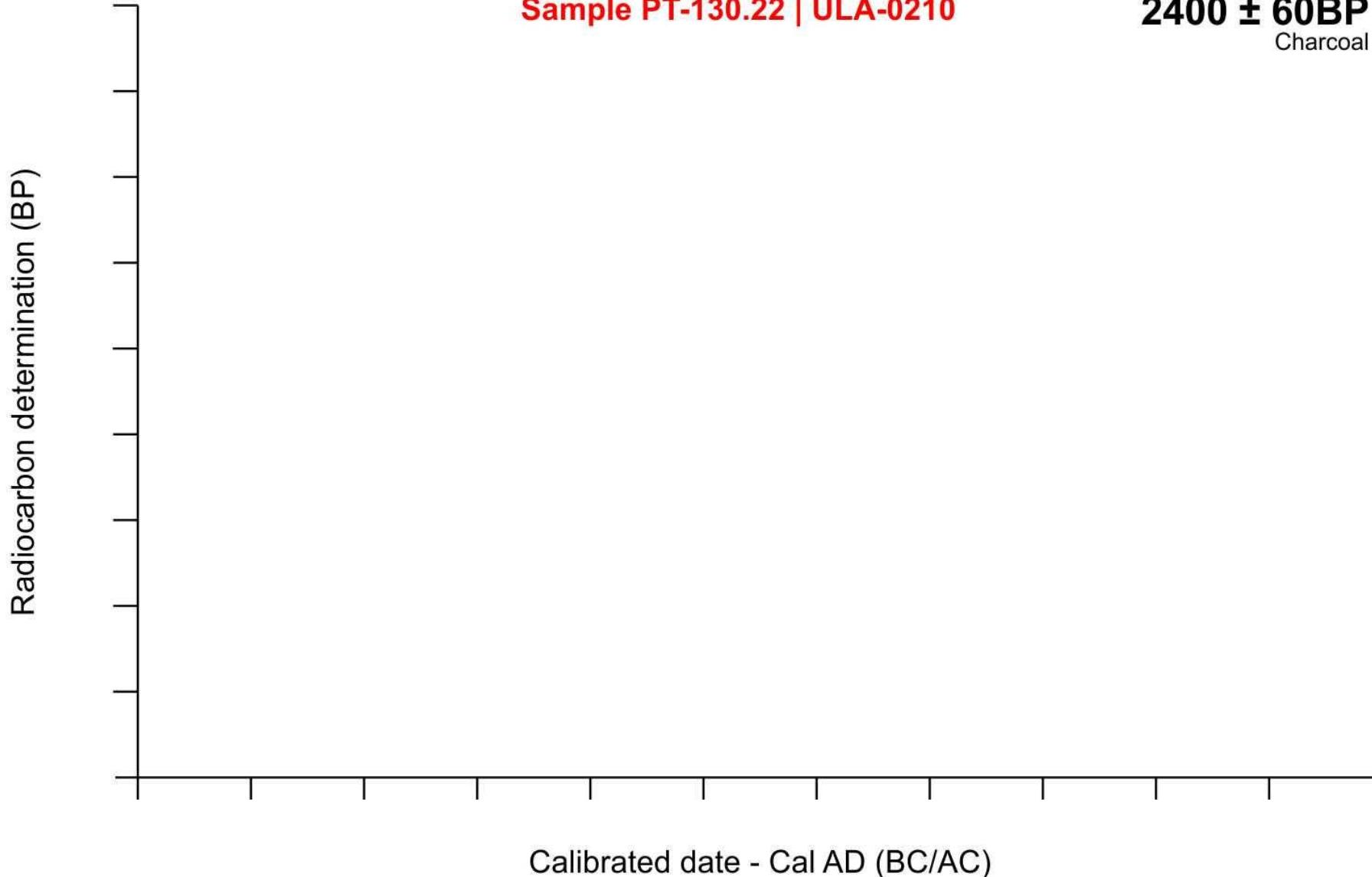






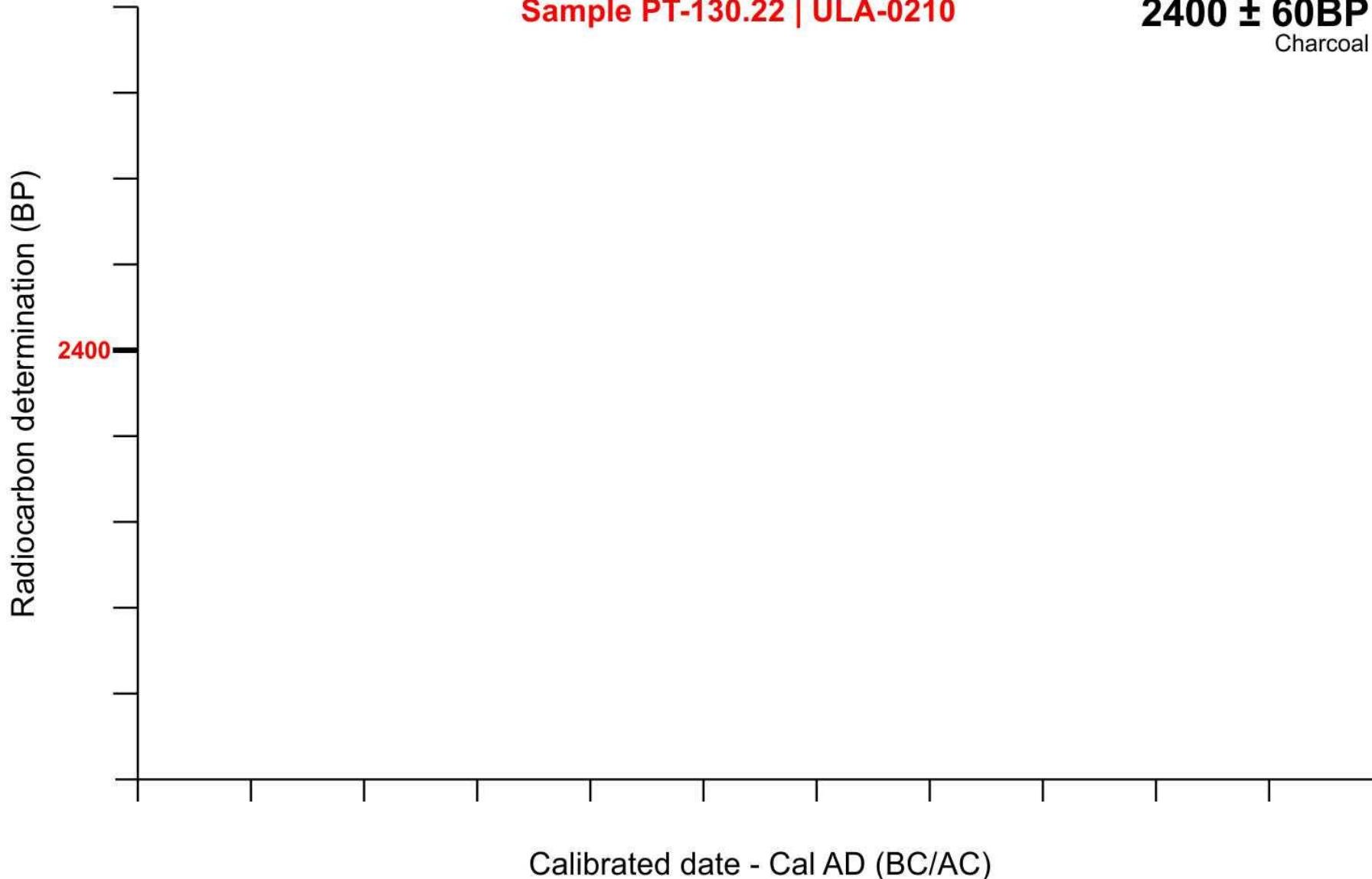
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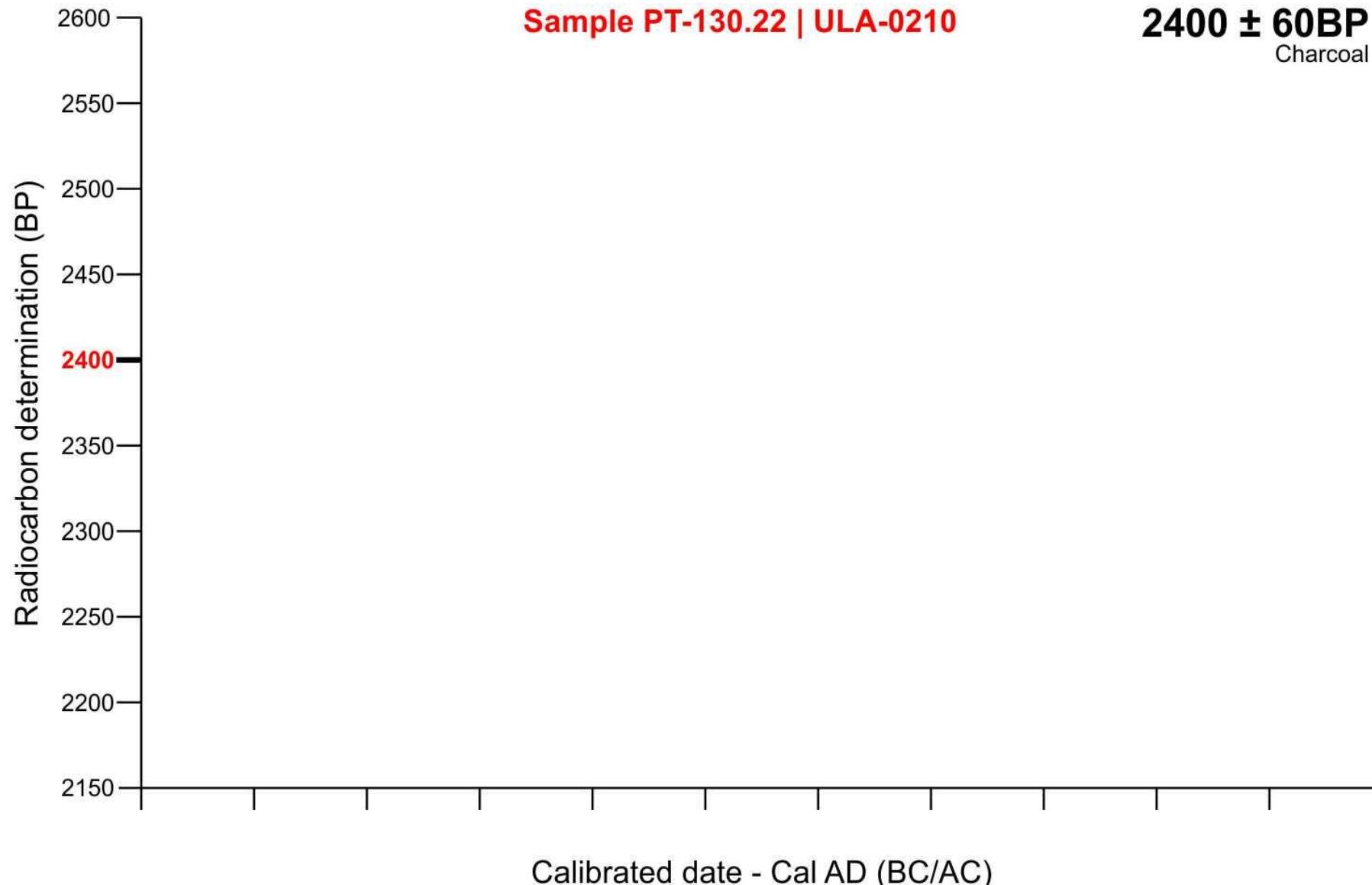
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Charcoal

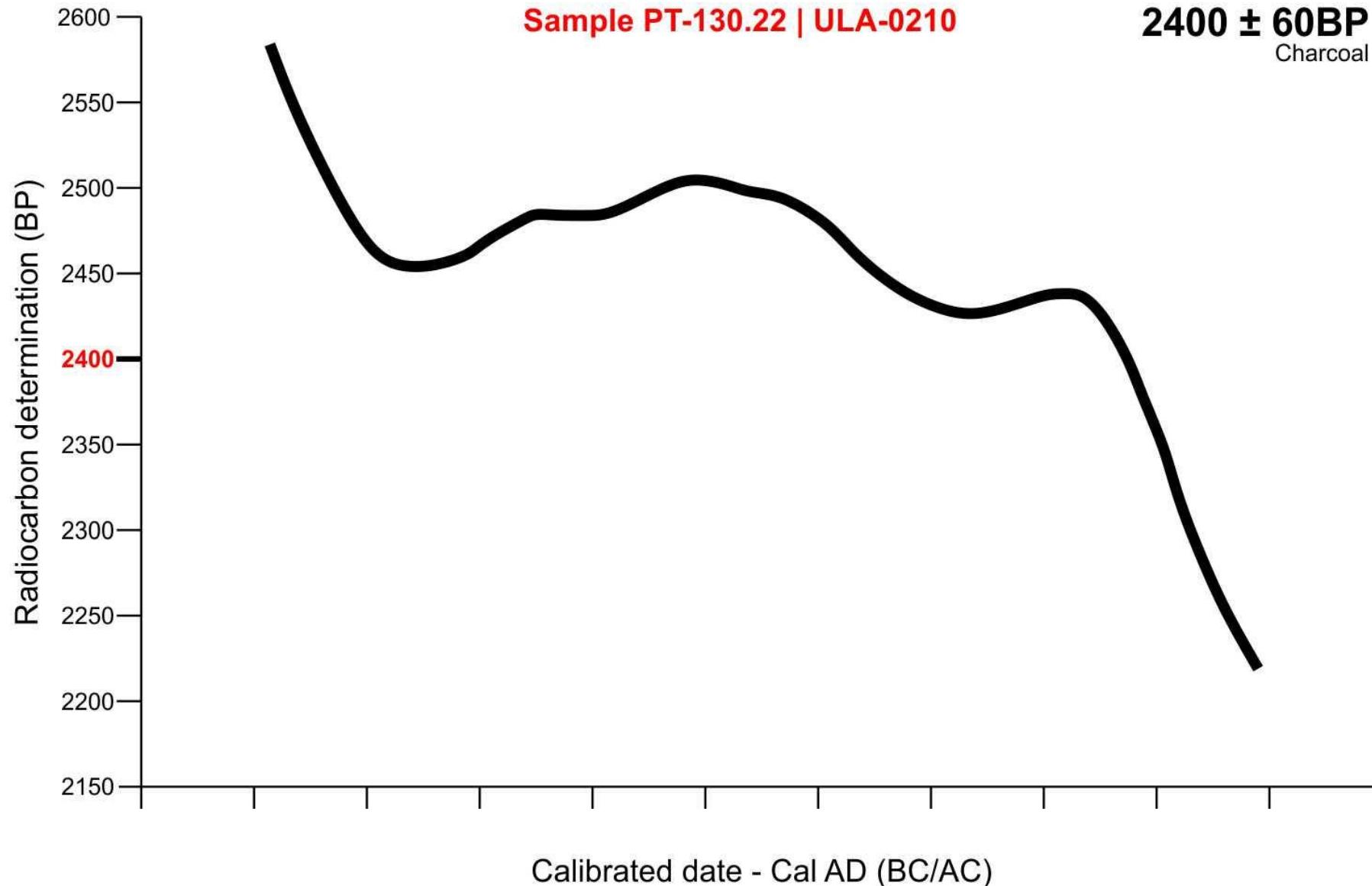


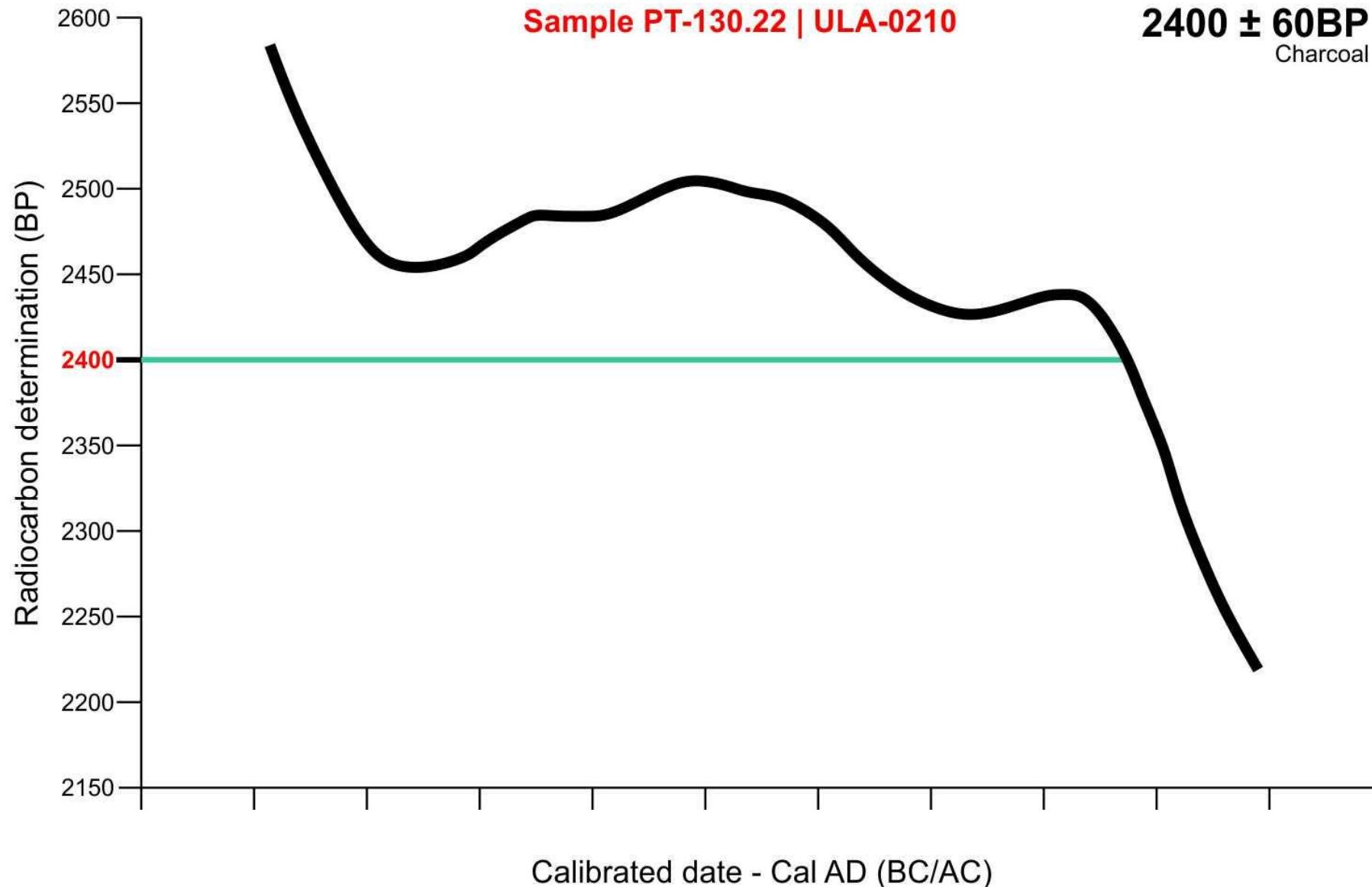
Sample PT-130.22 | ULA-0210

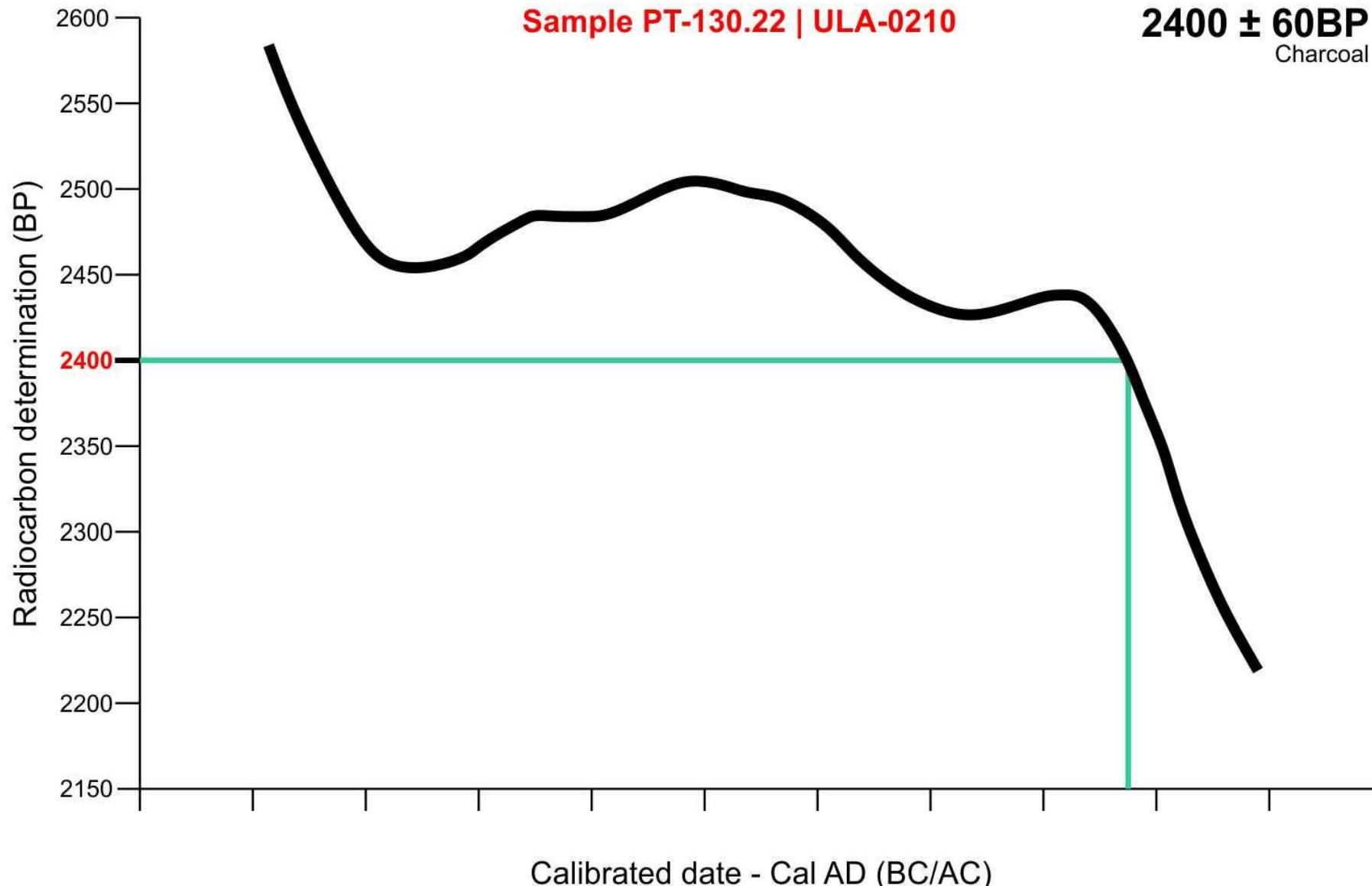
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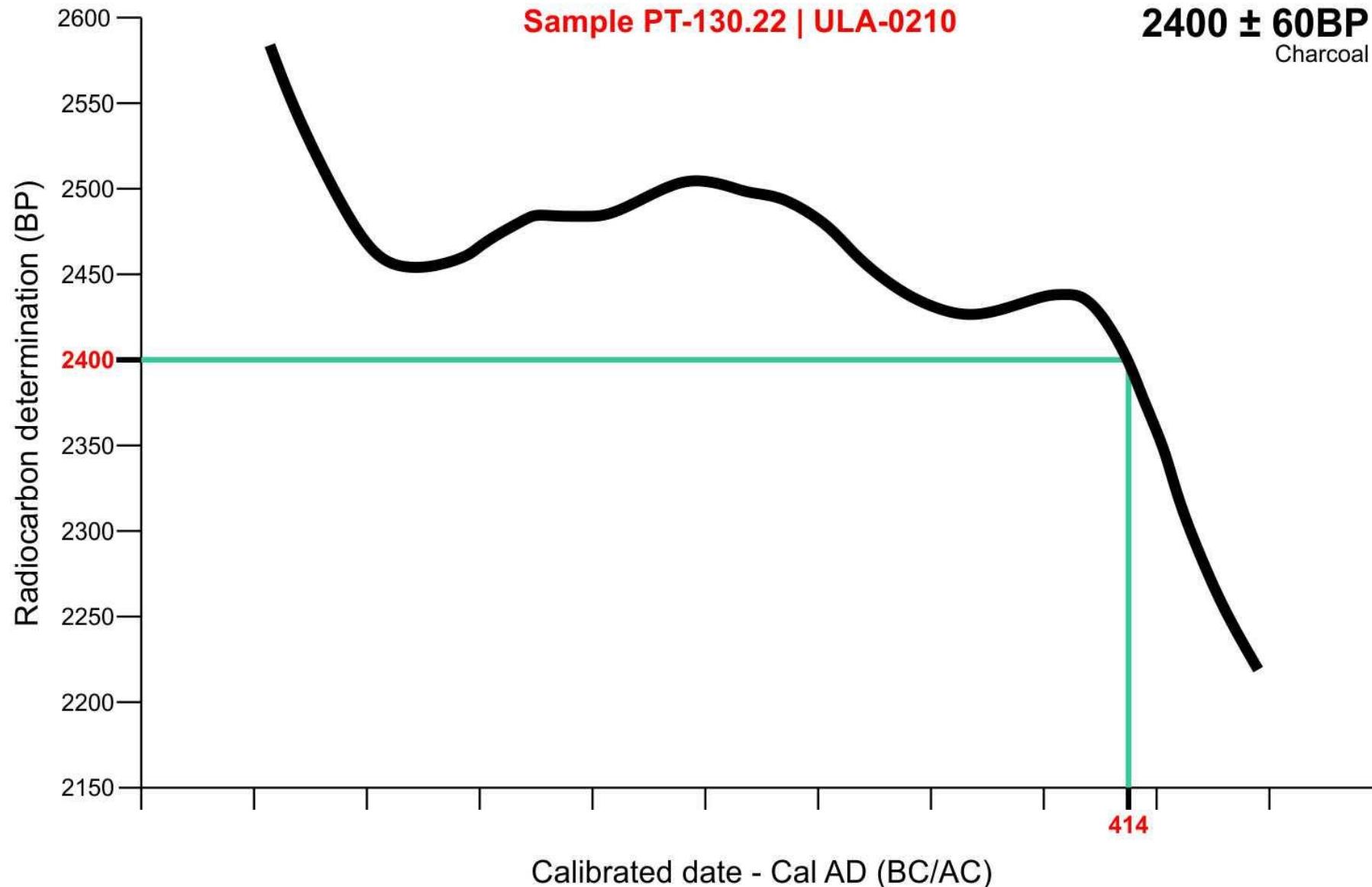


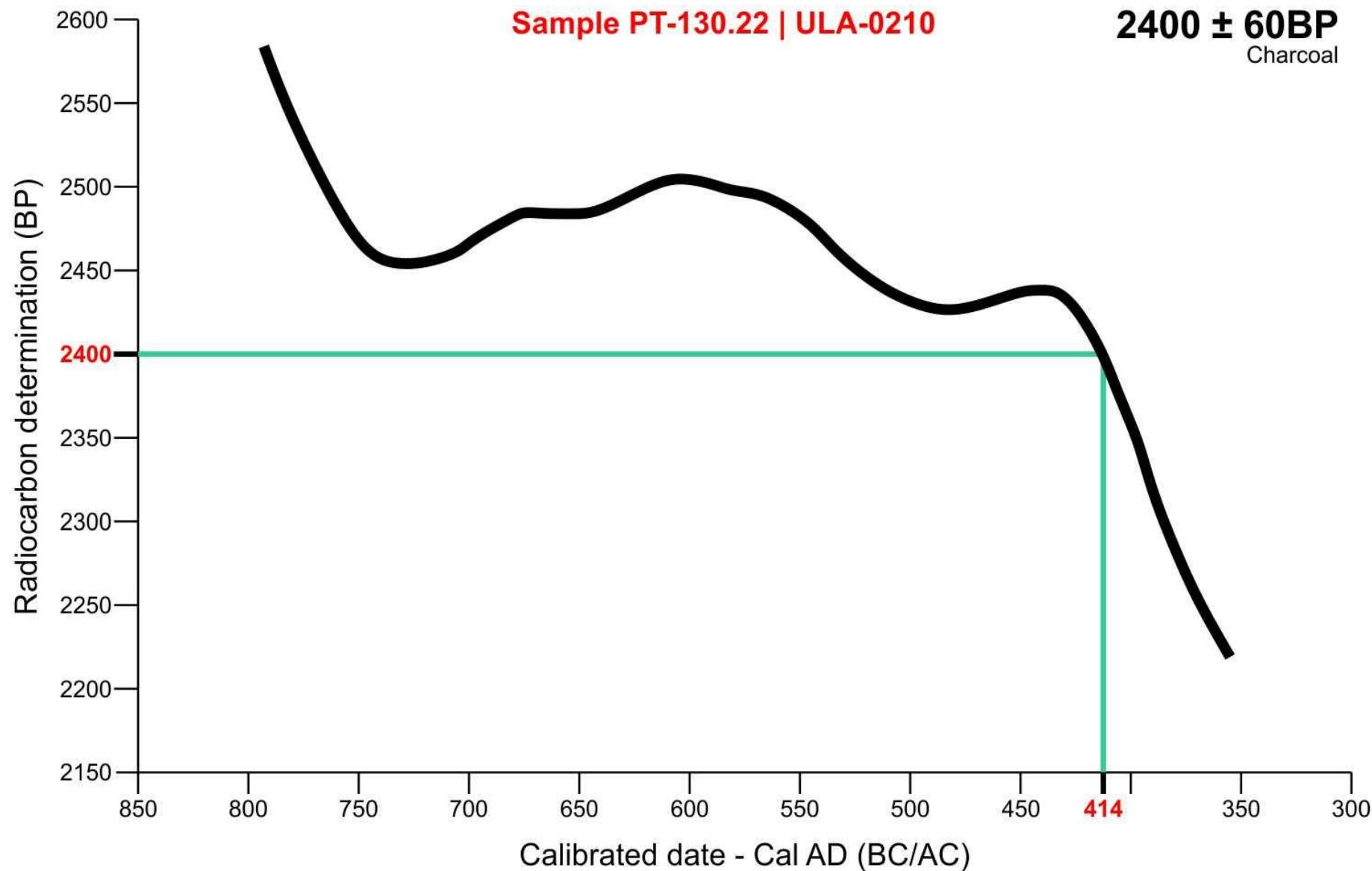


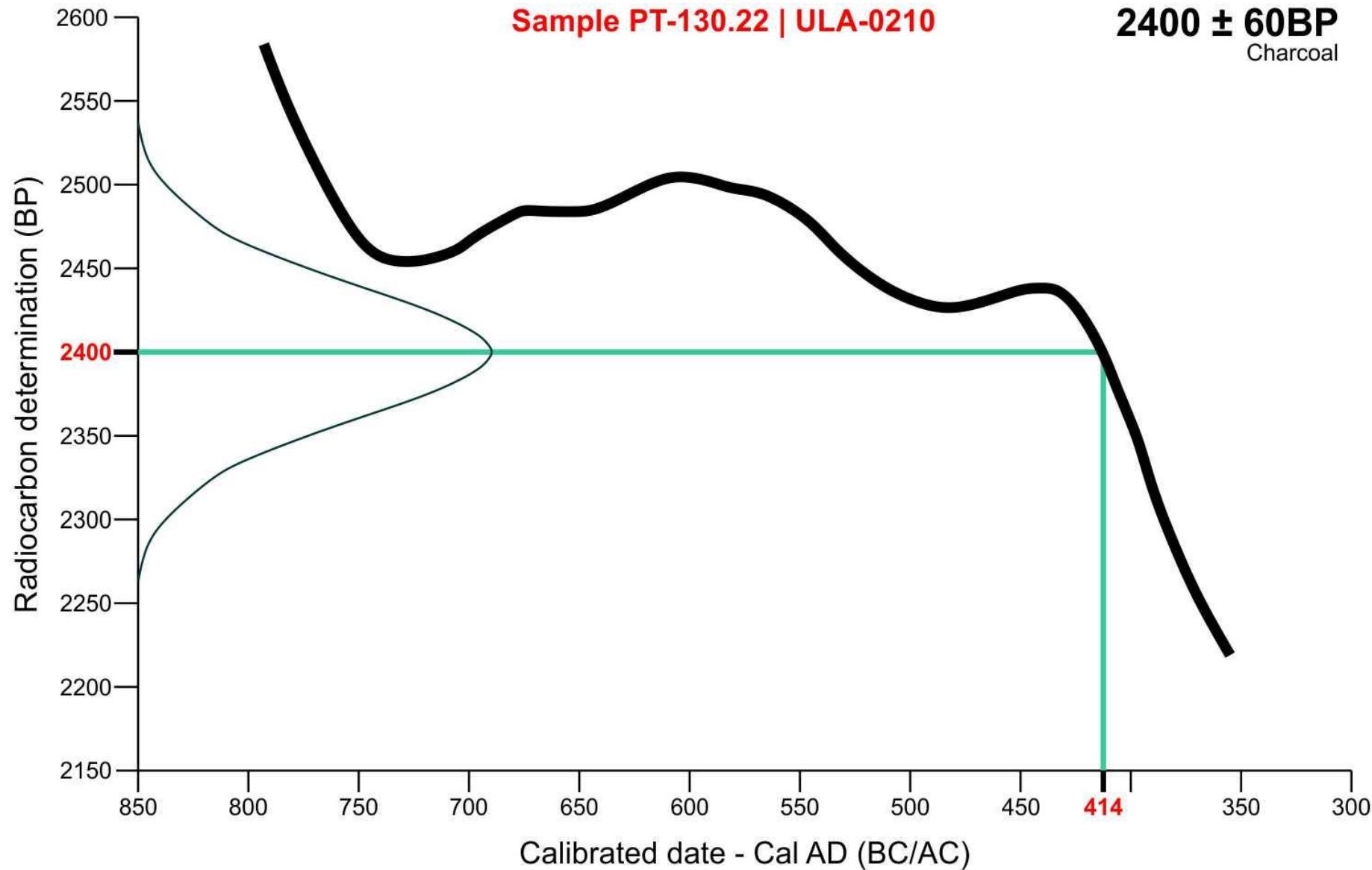


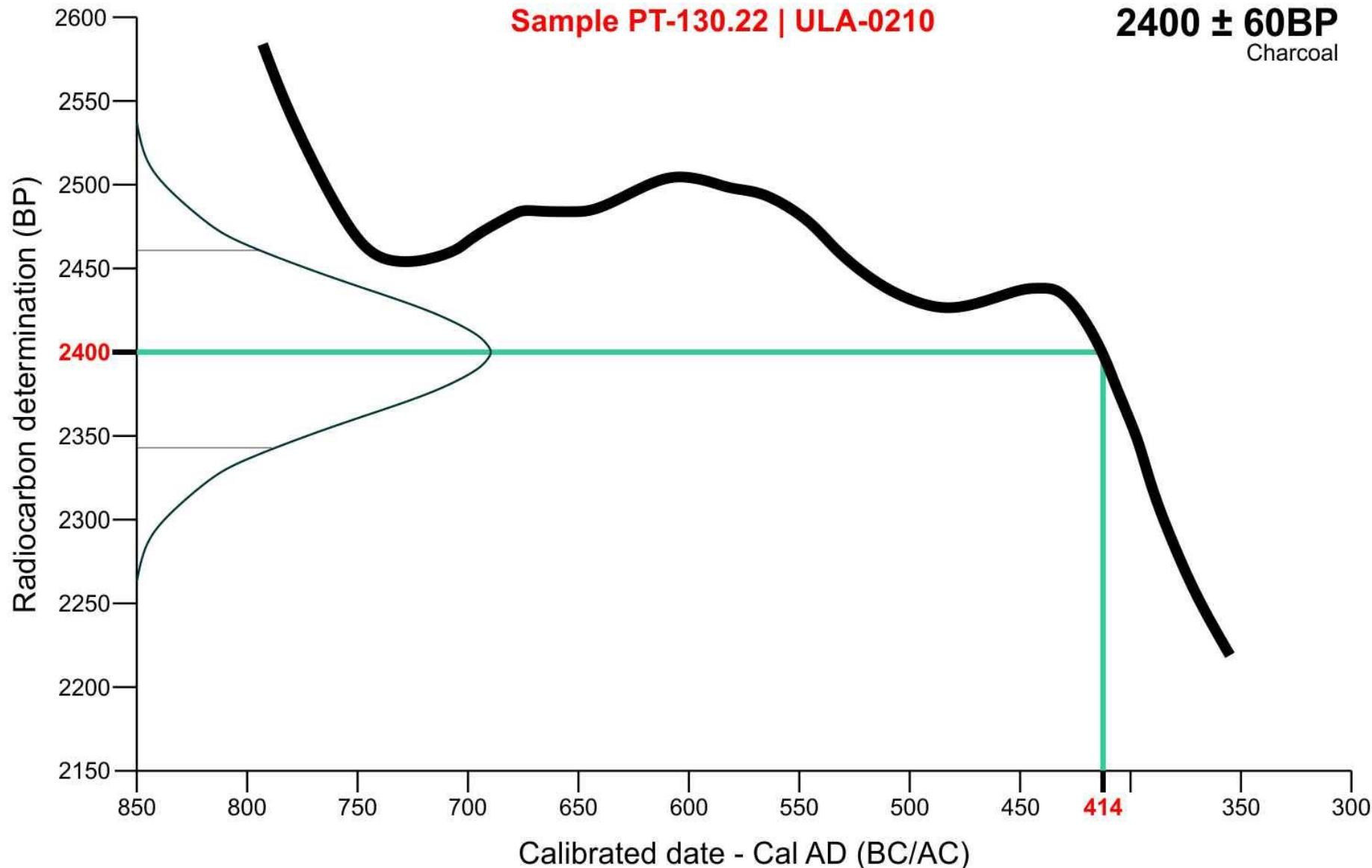


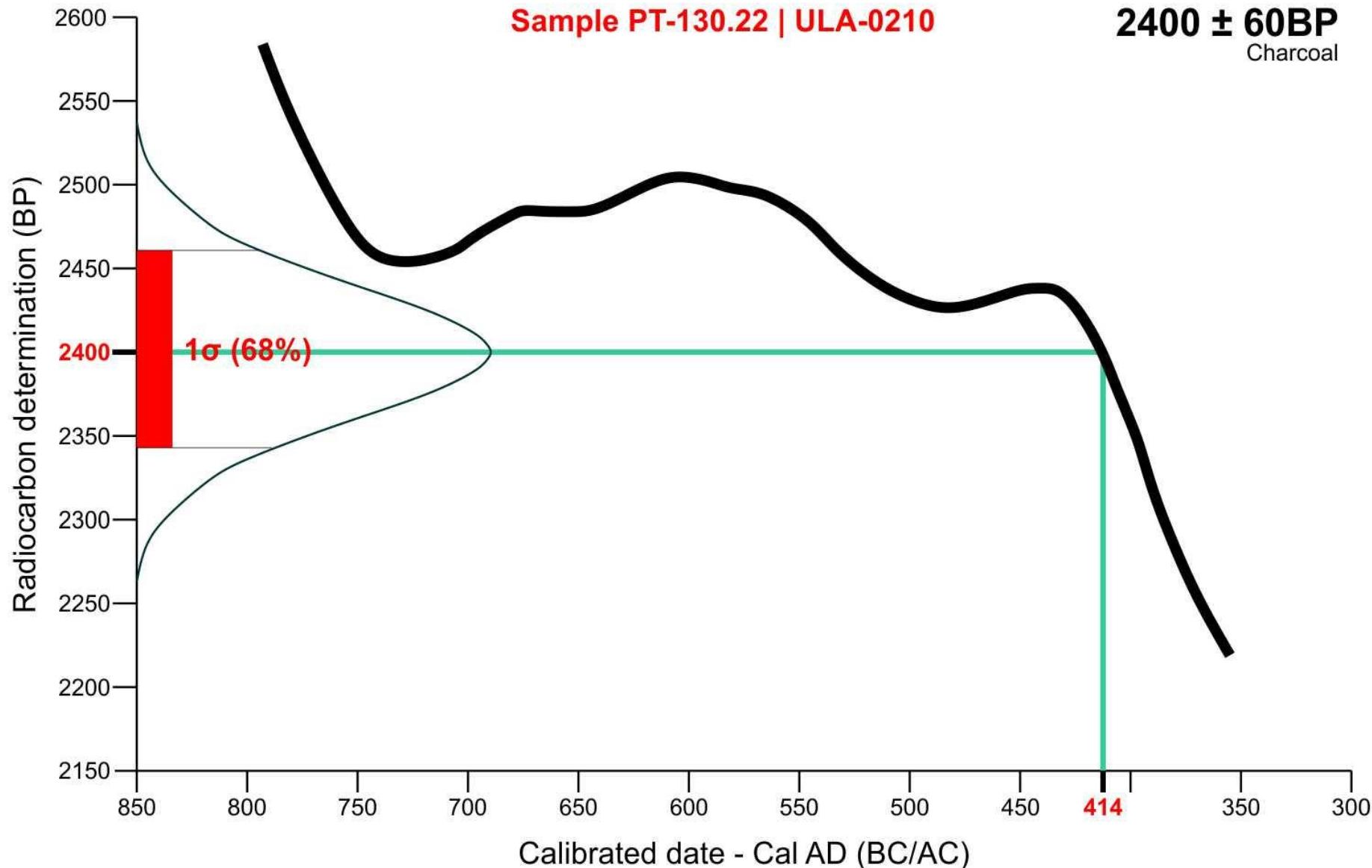


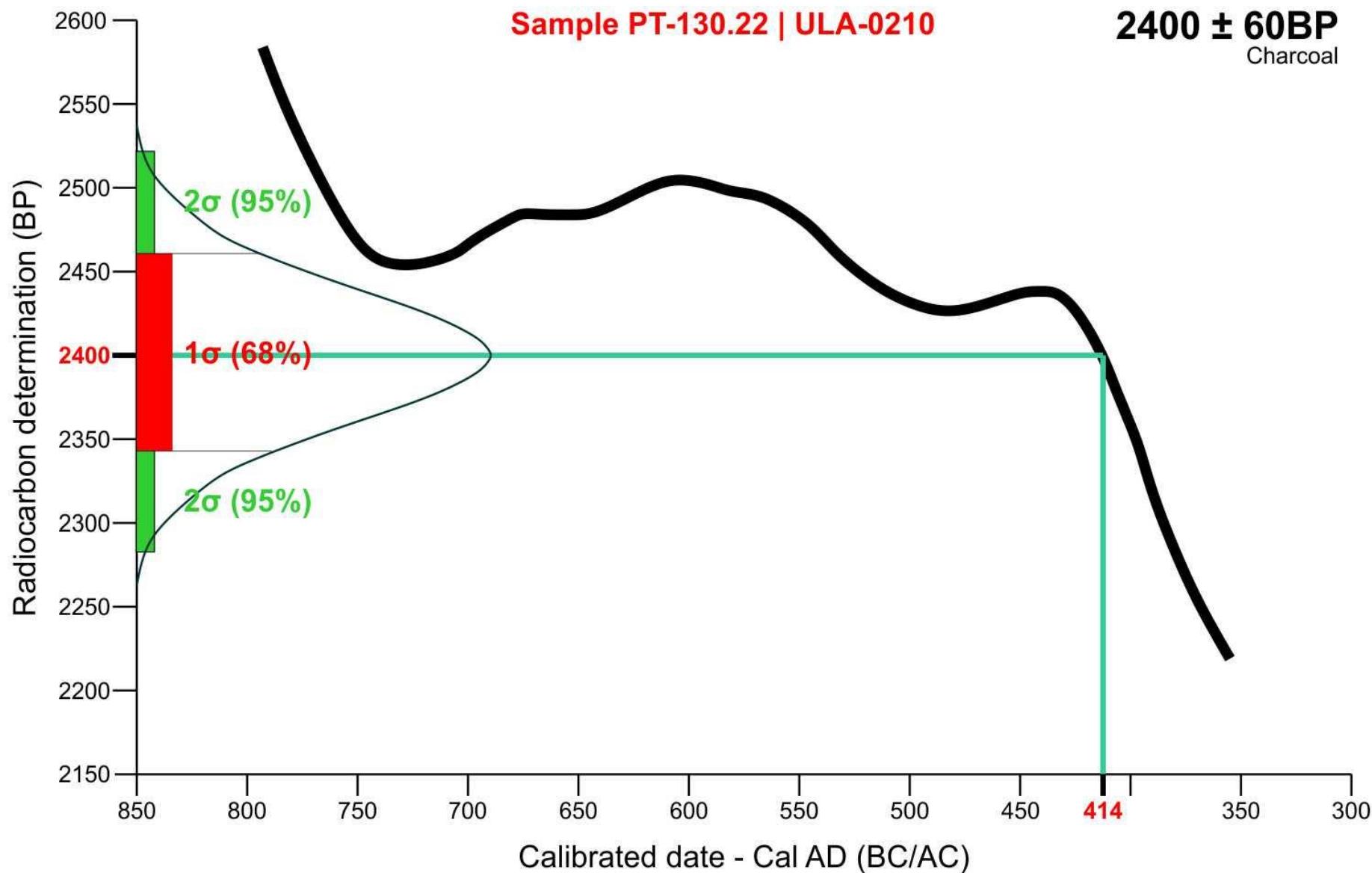


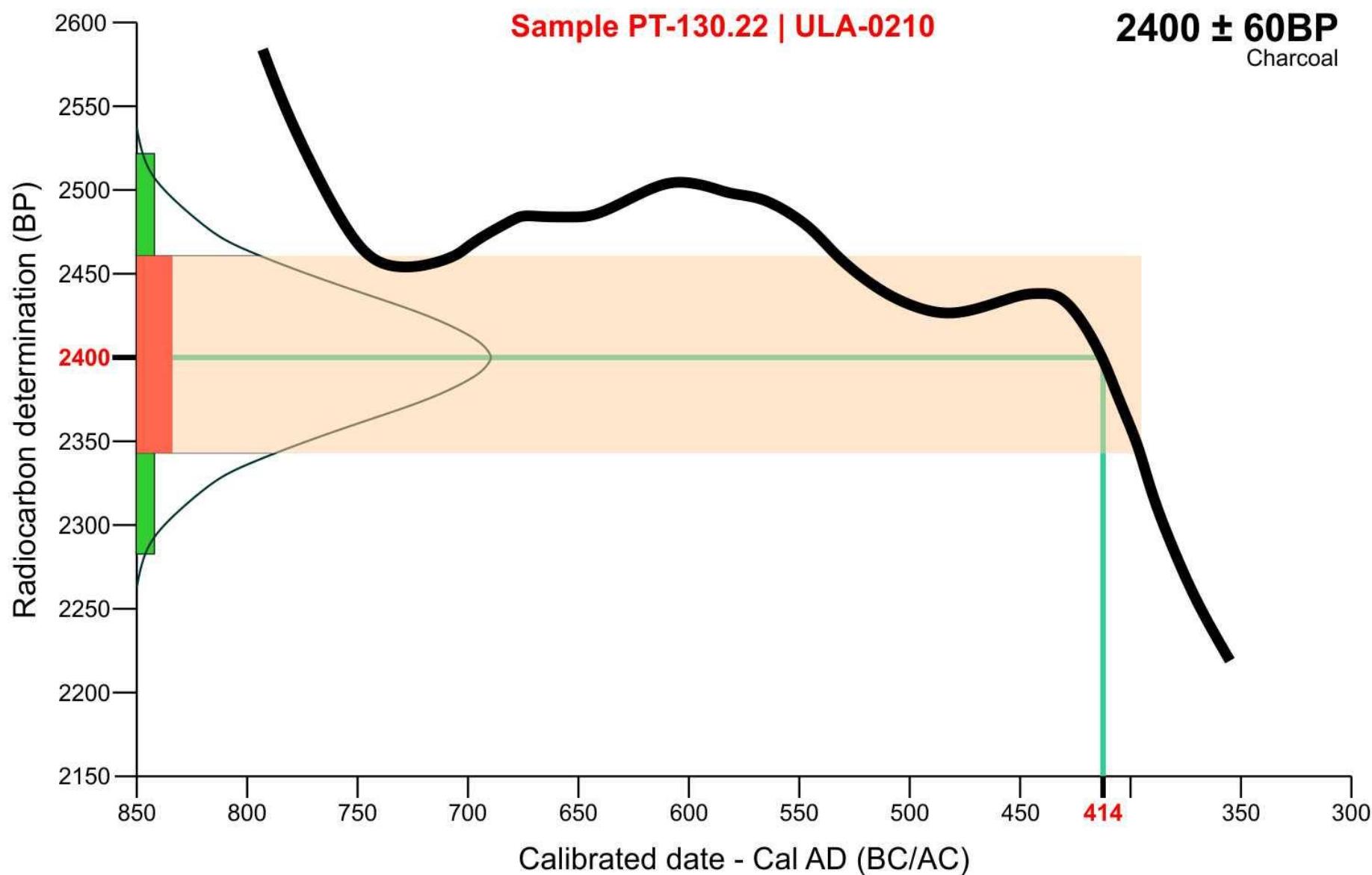


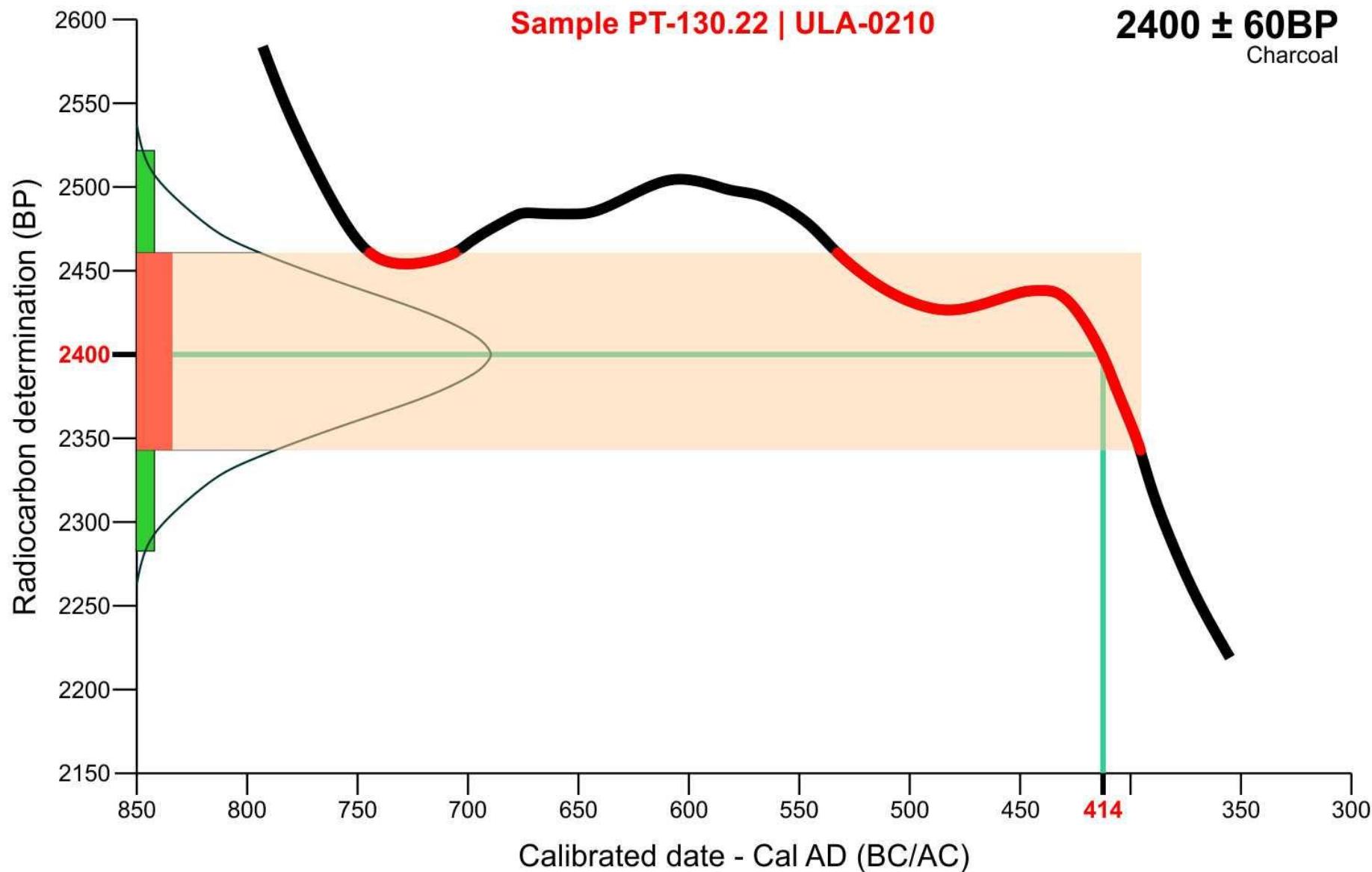


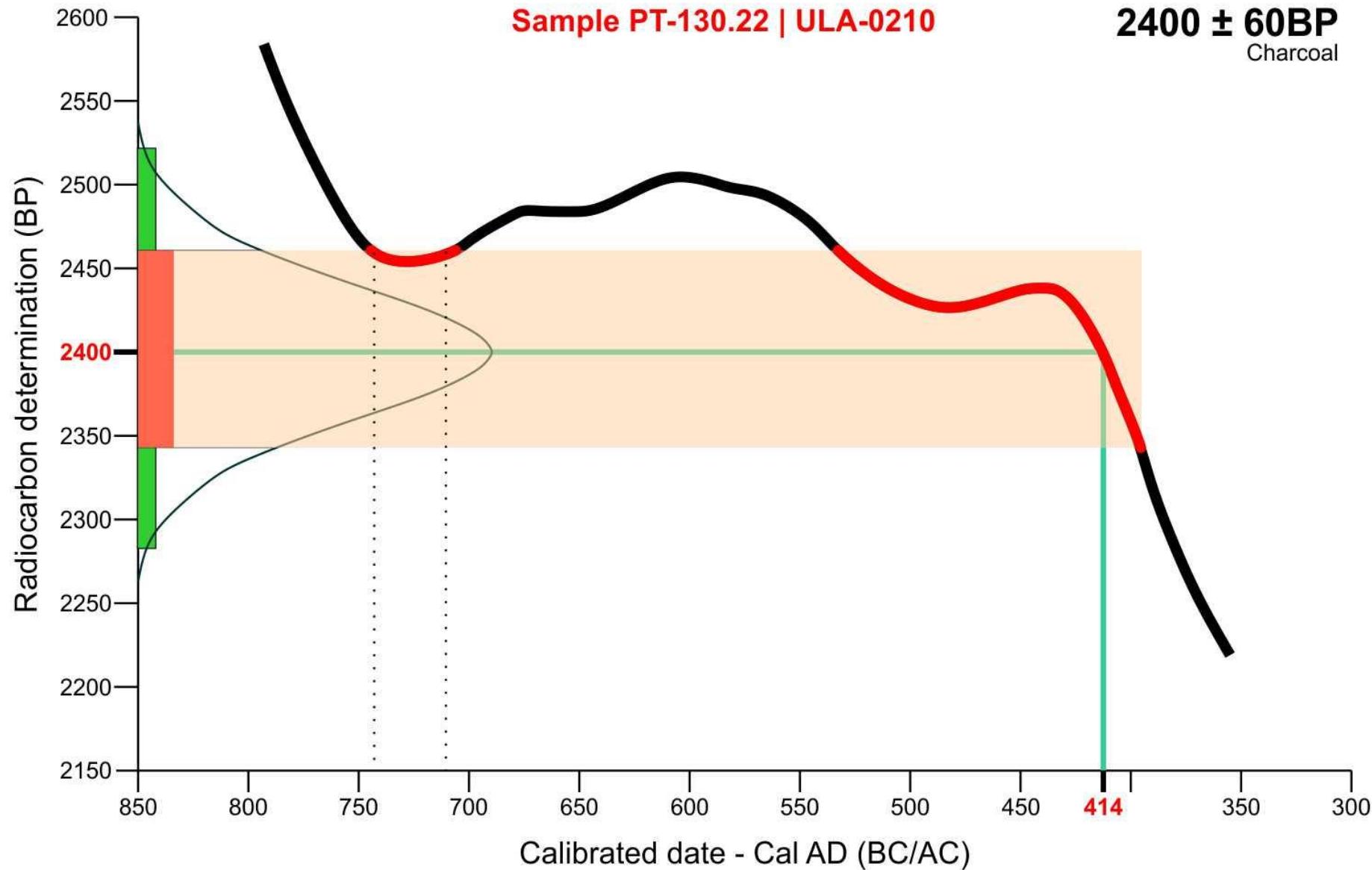


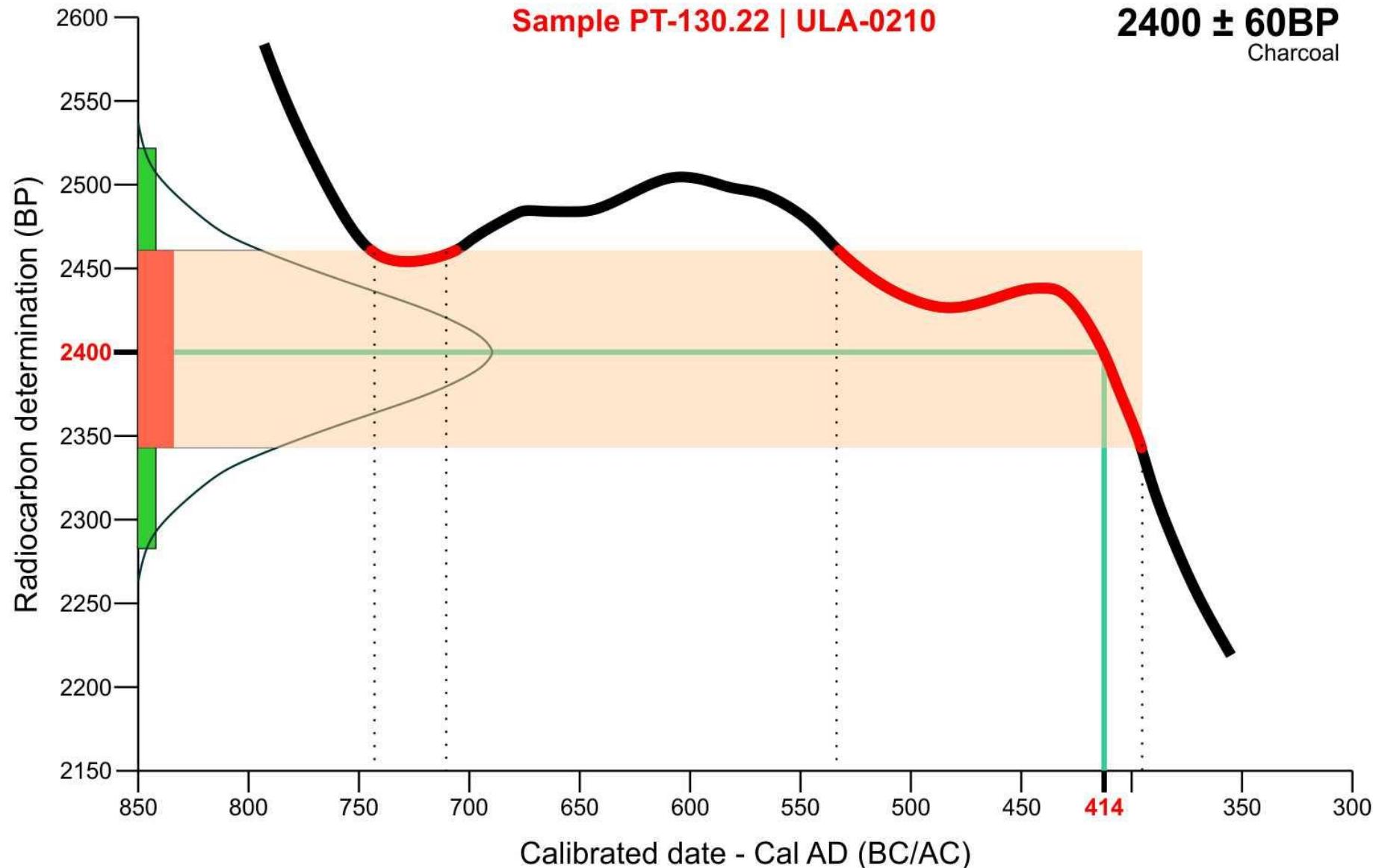


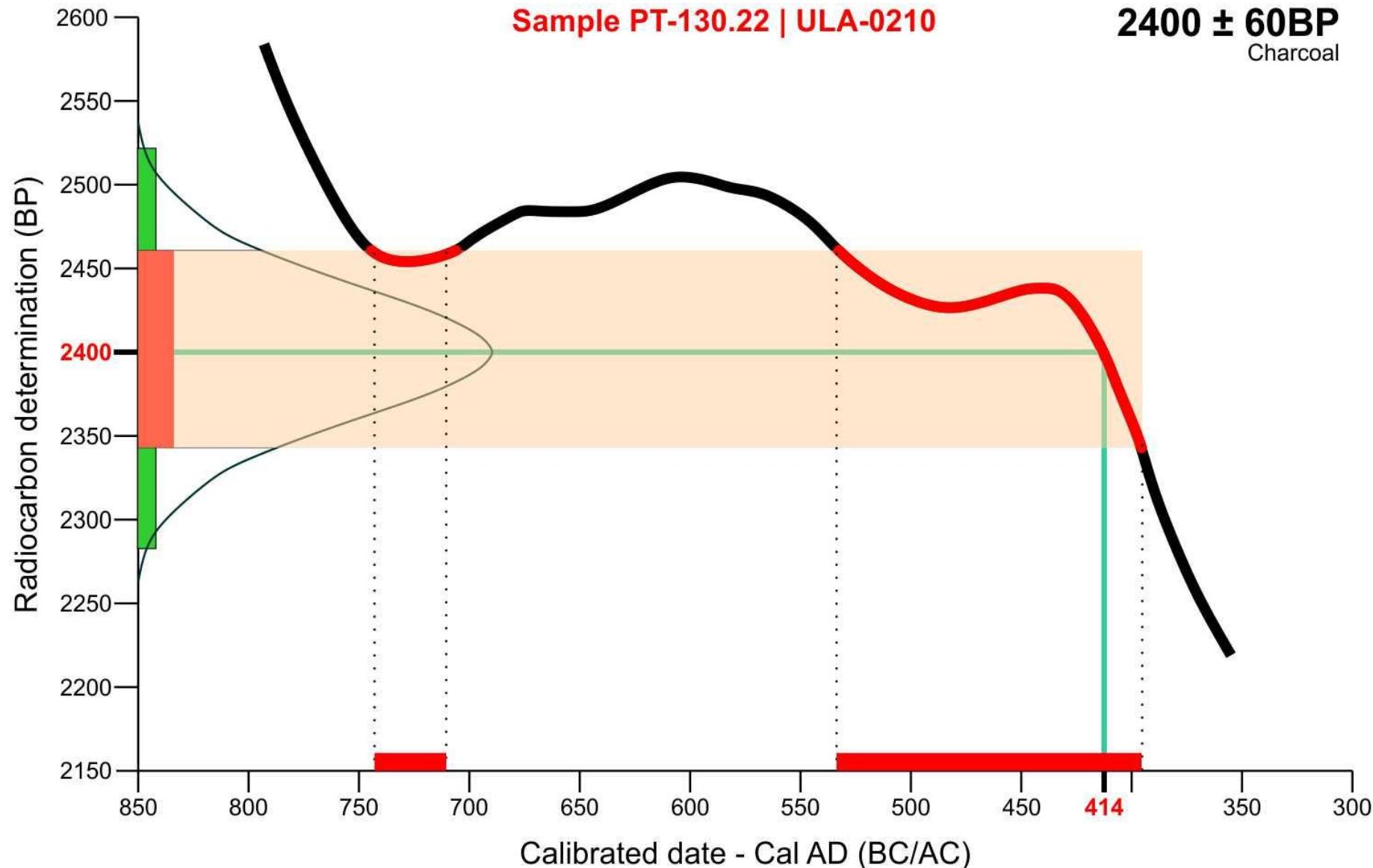


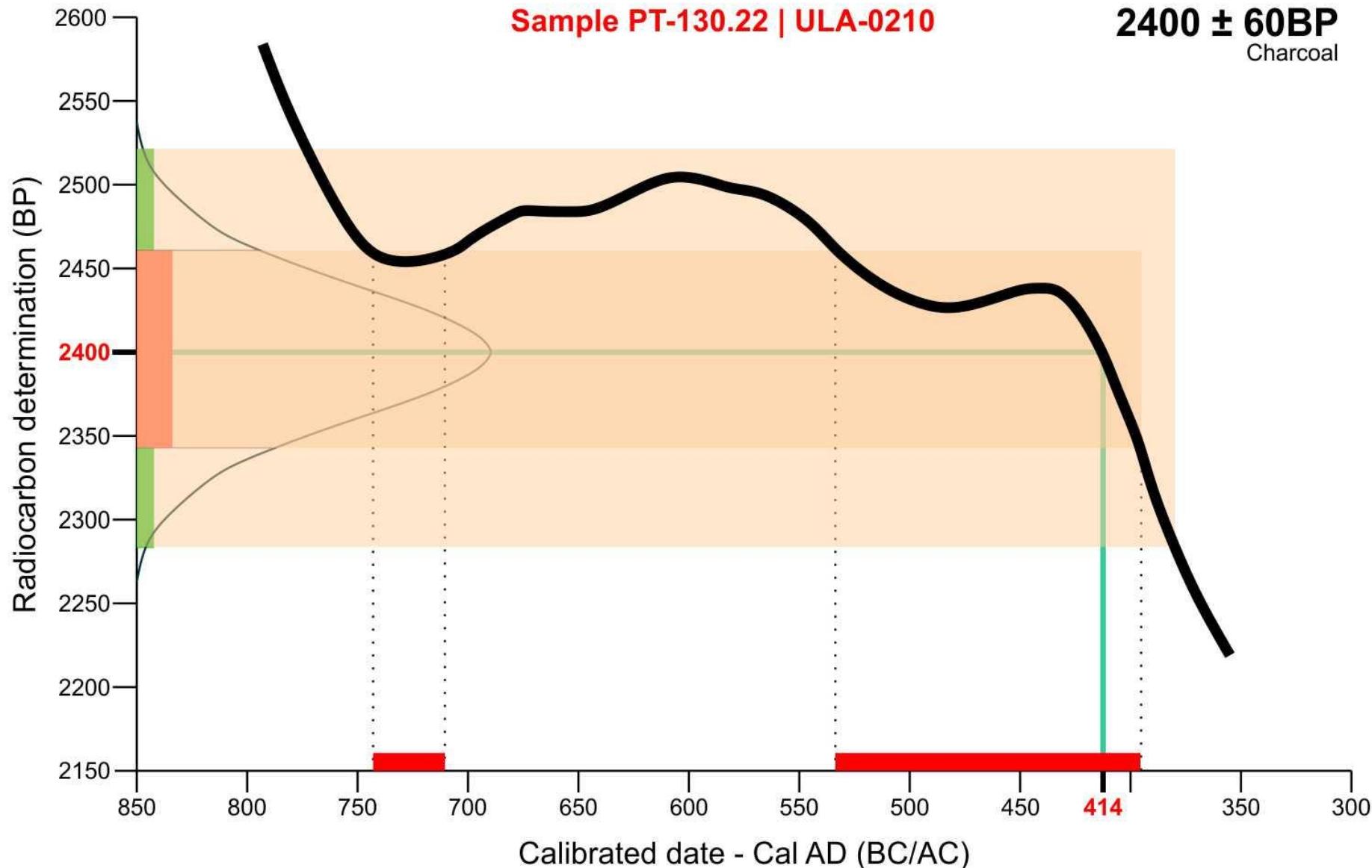


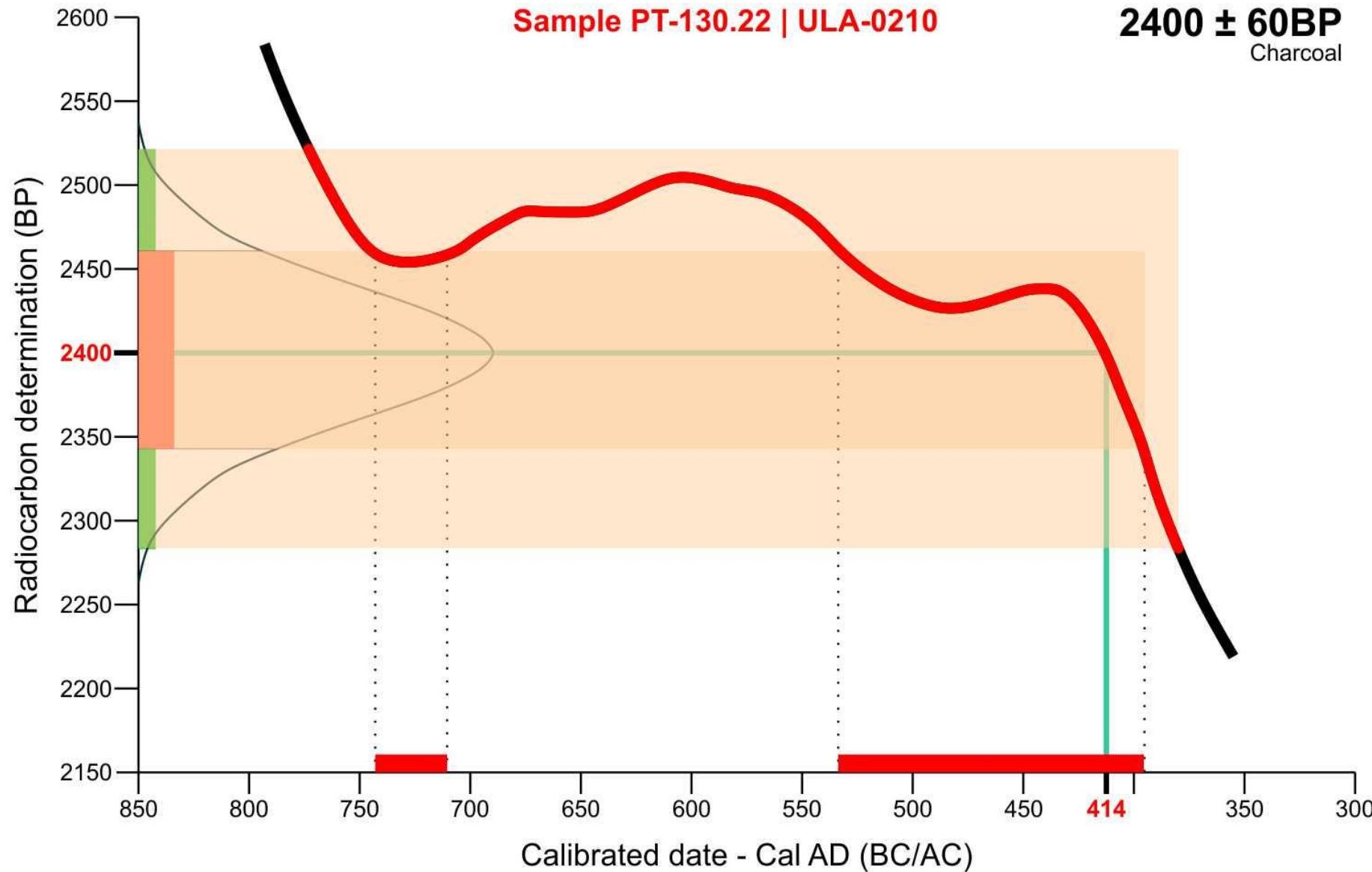


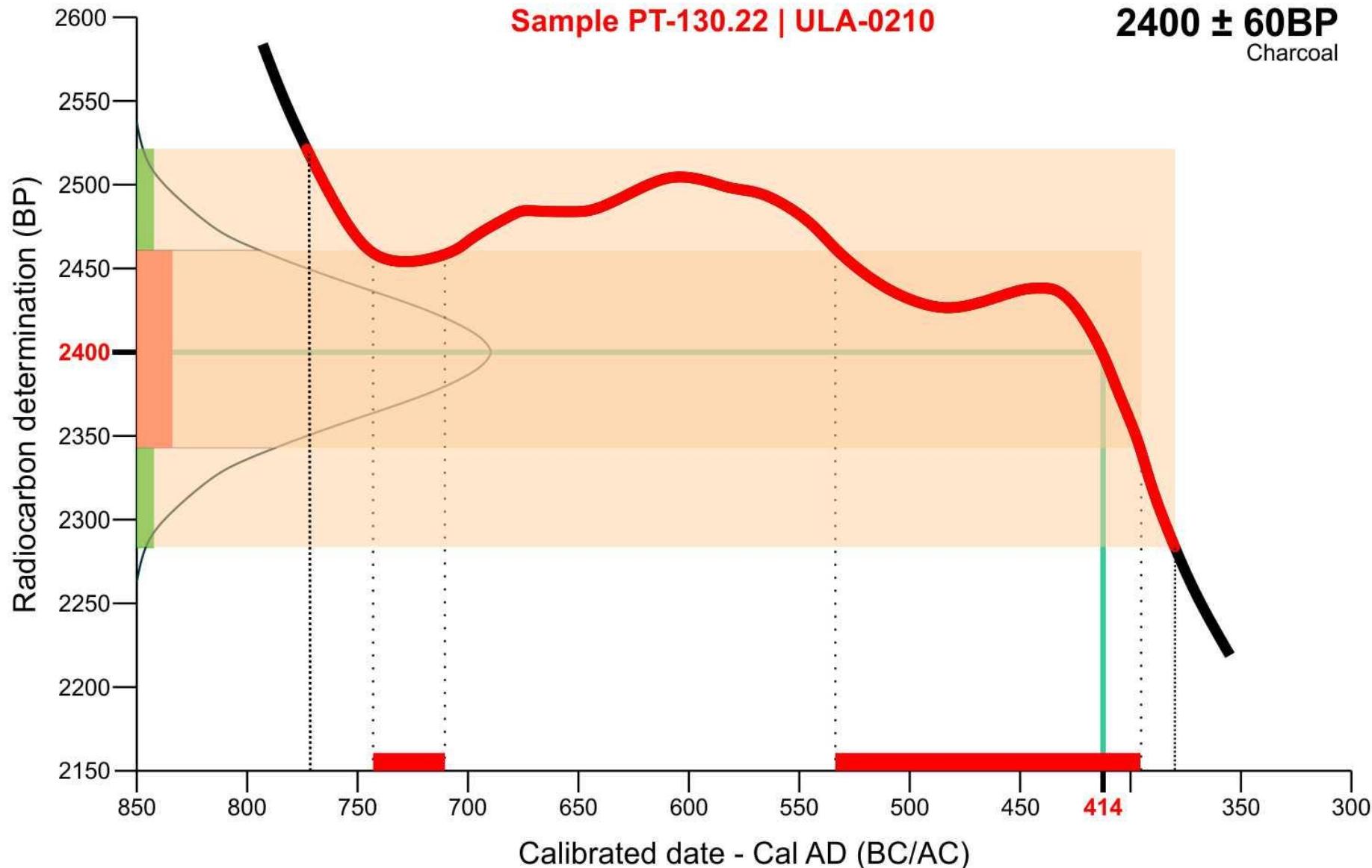


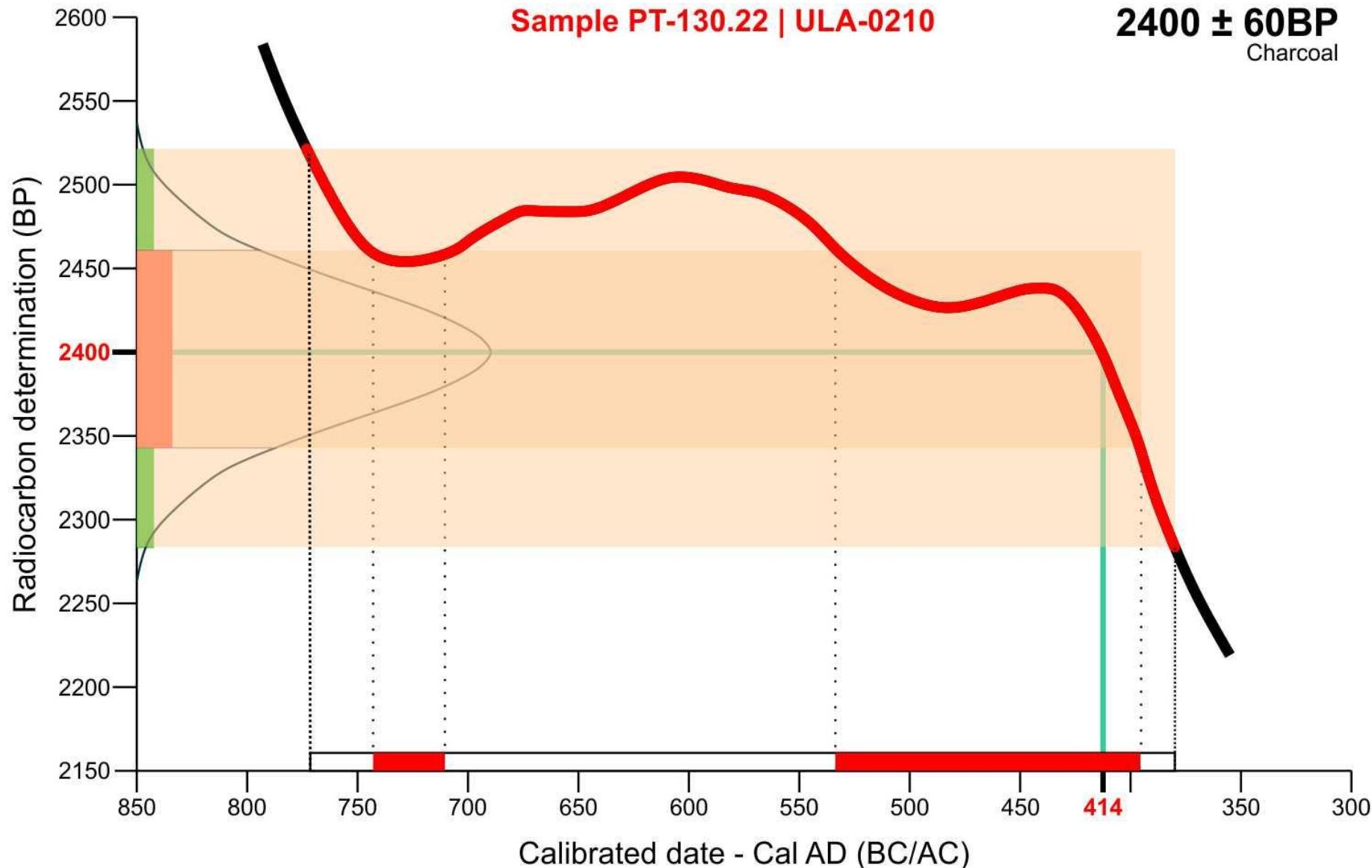


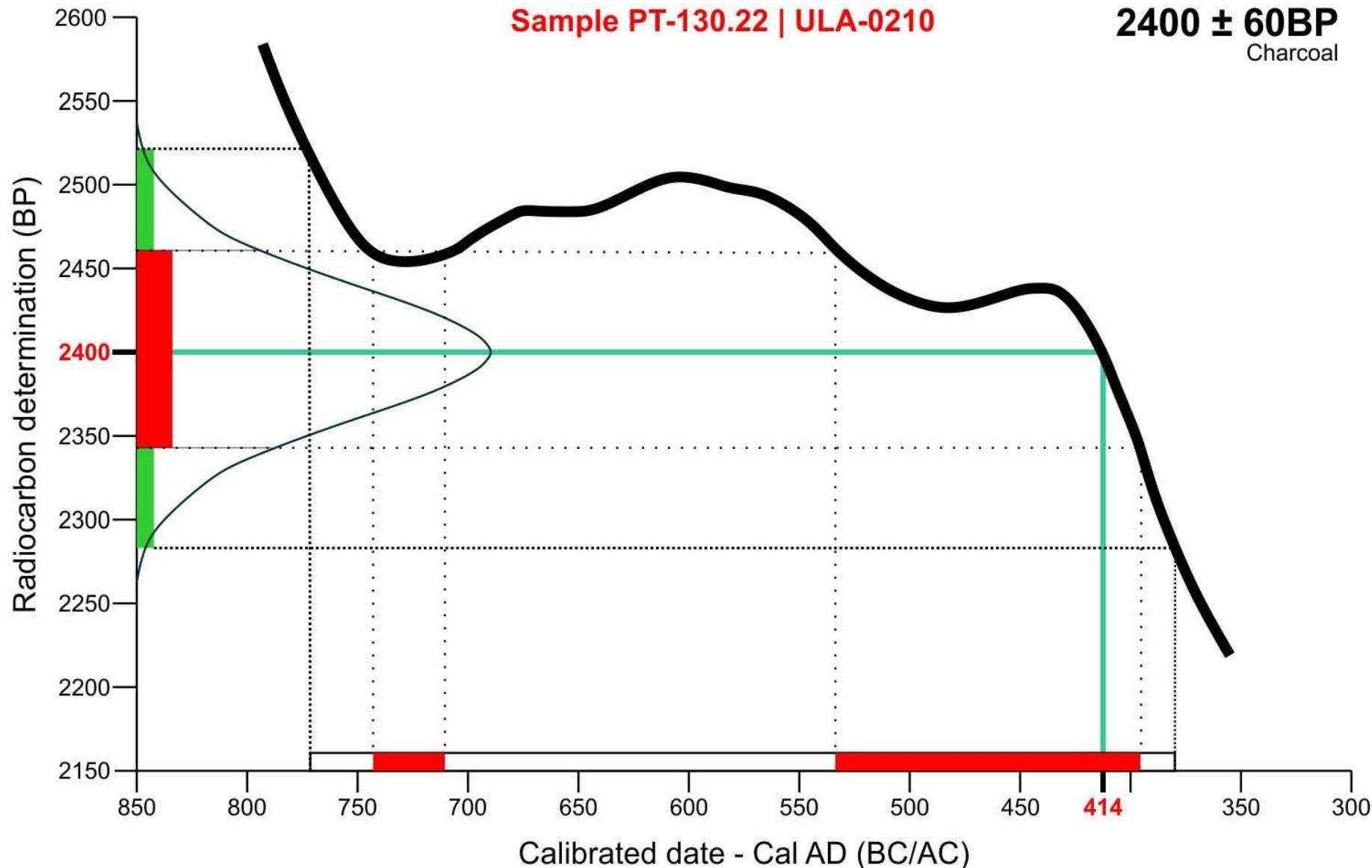


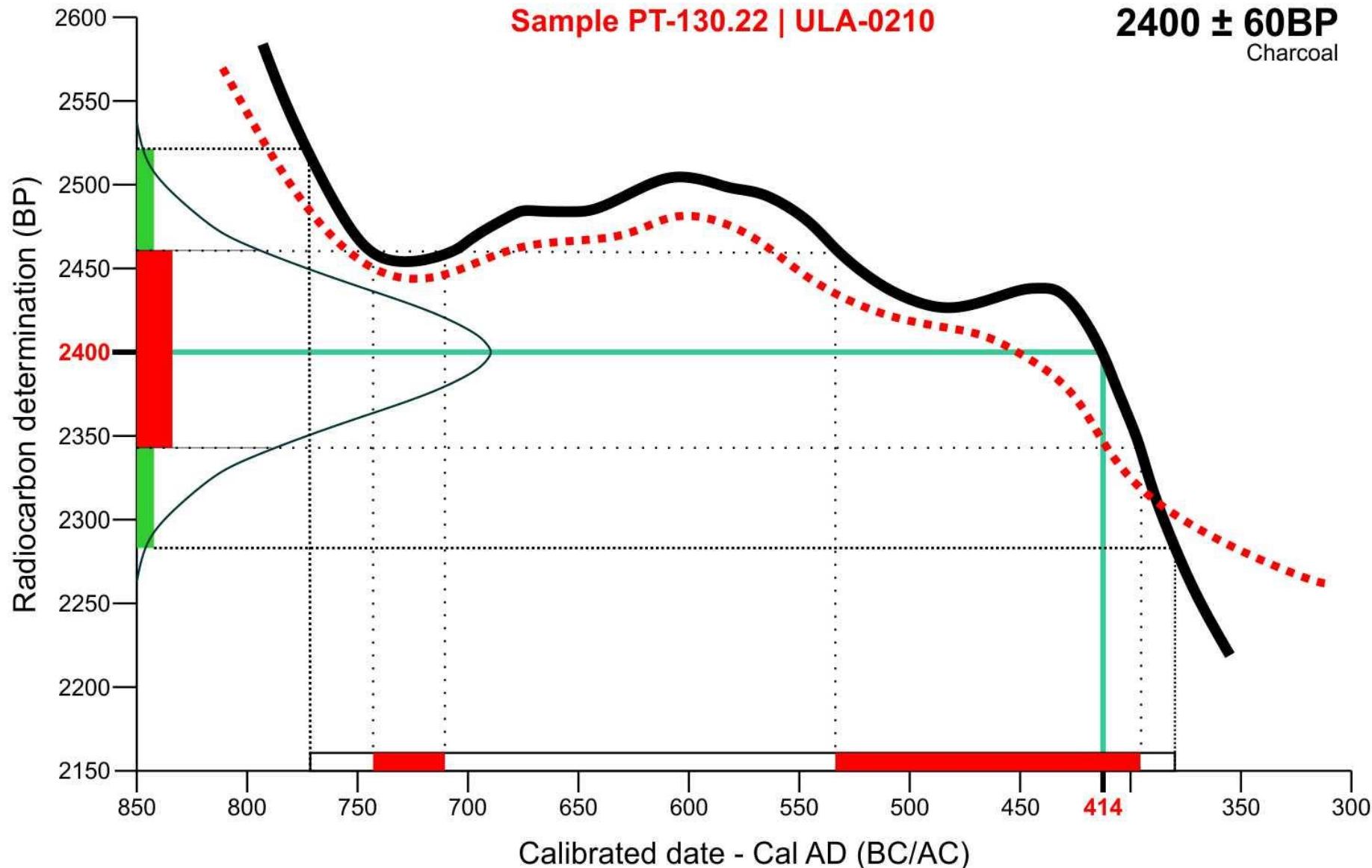


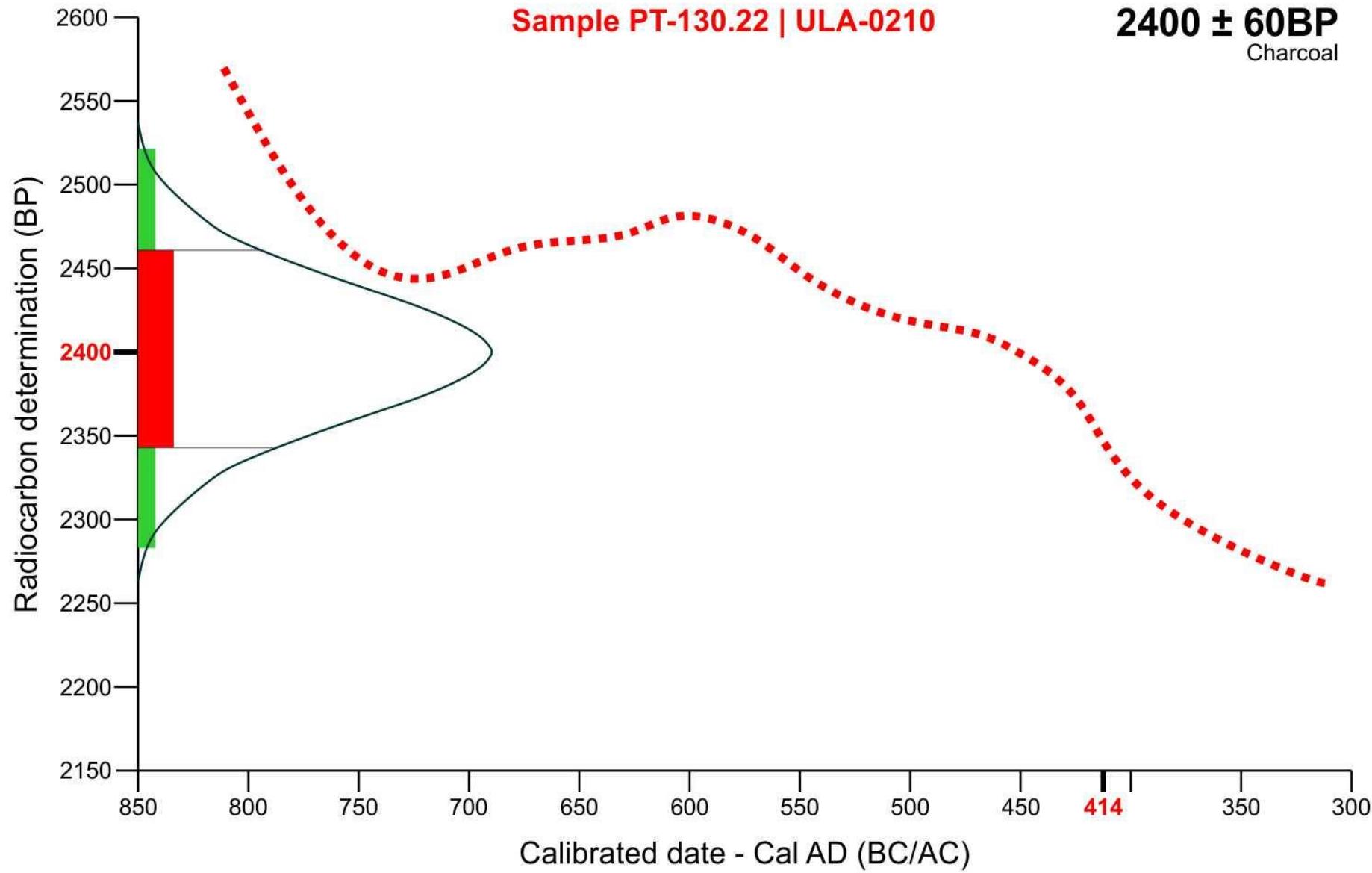






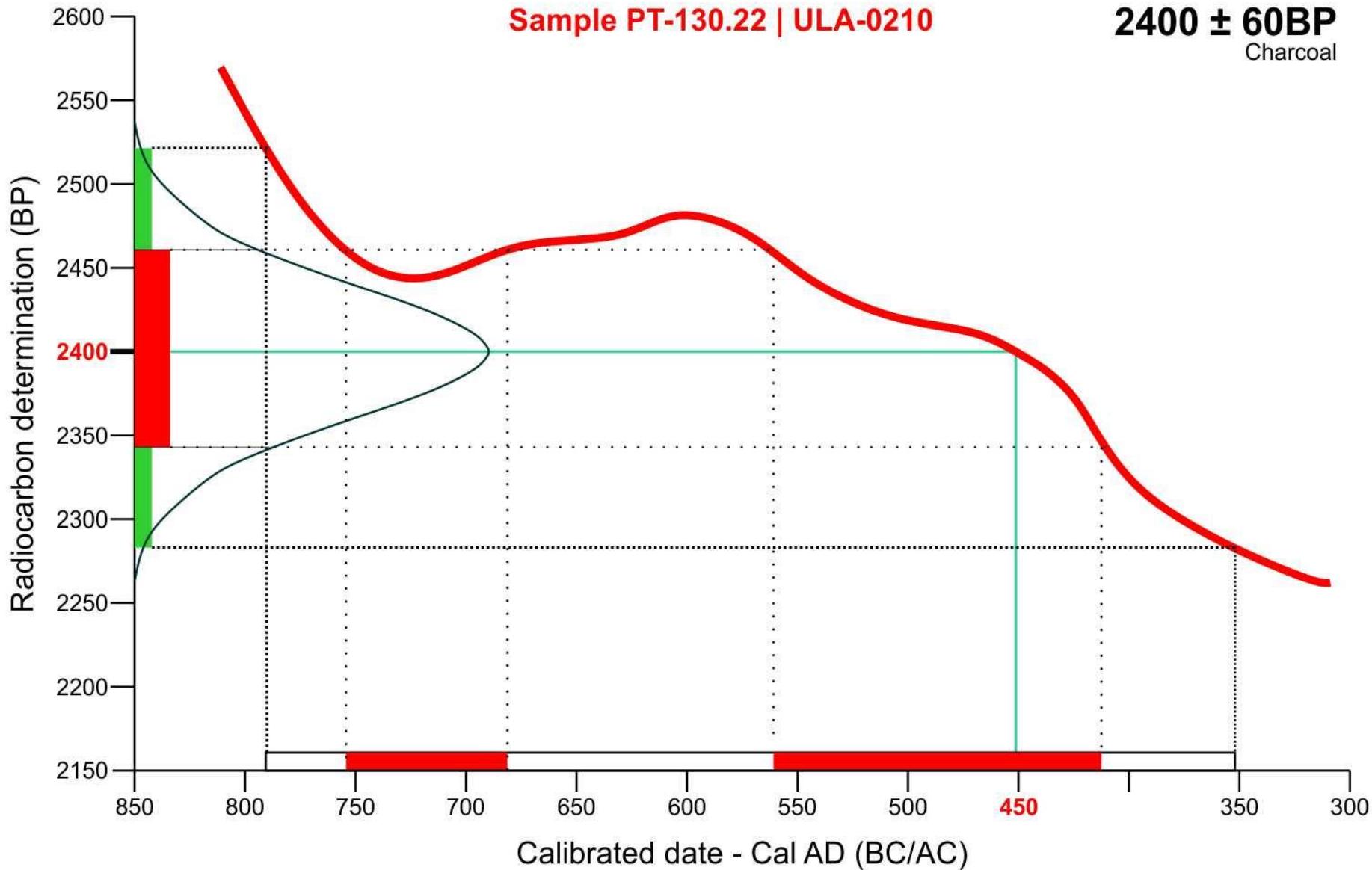


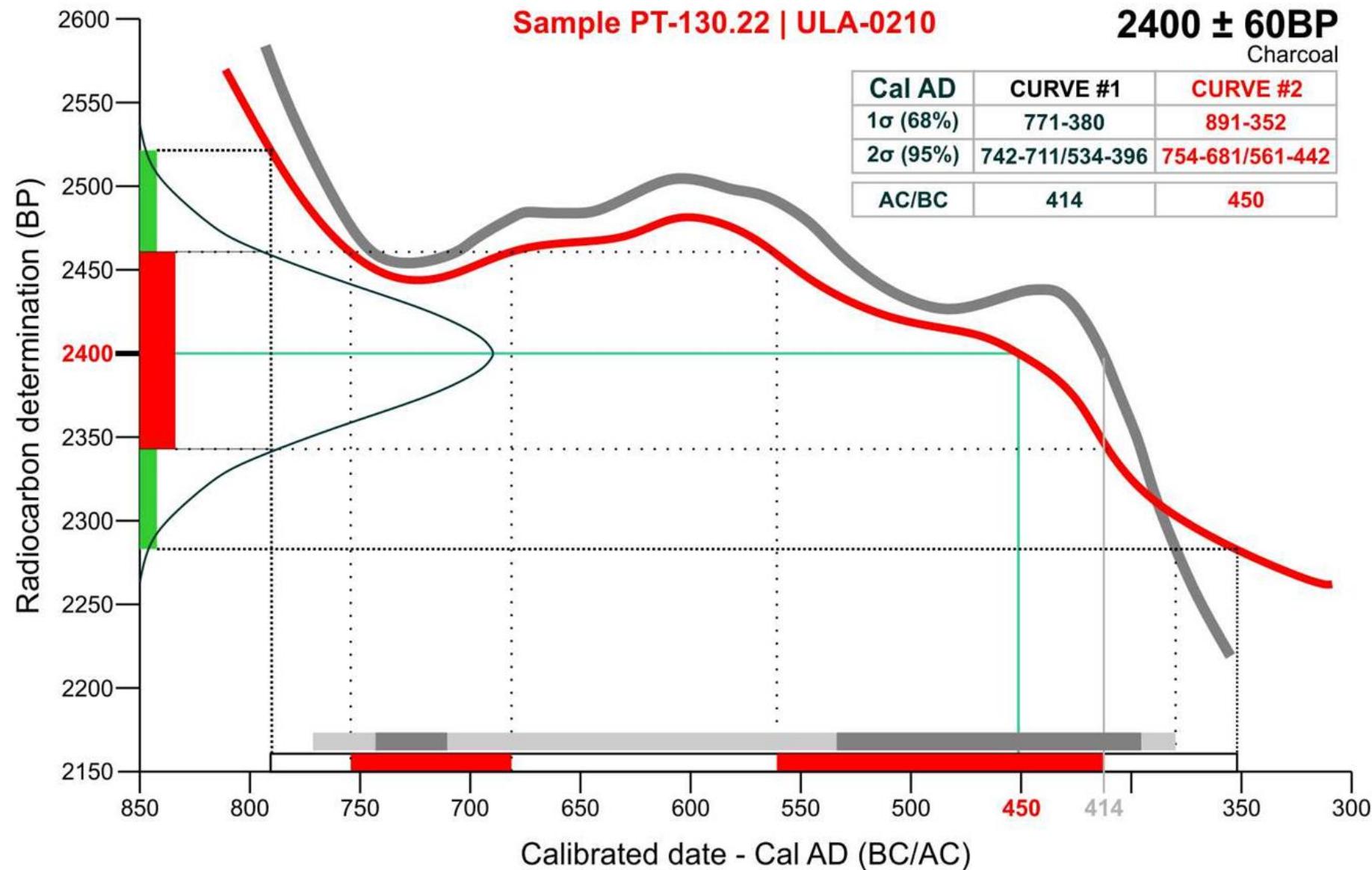




Sample PT-130.22 | ULA-0210

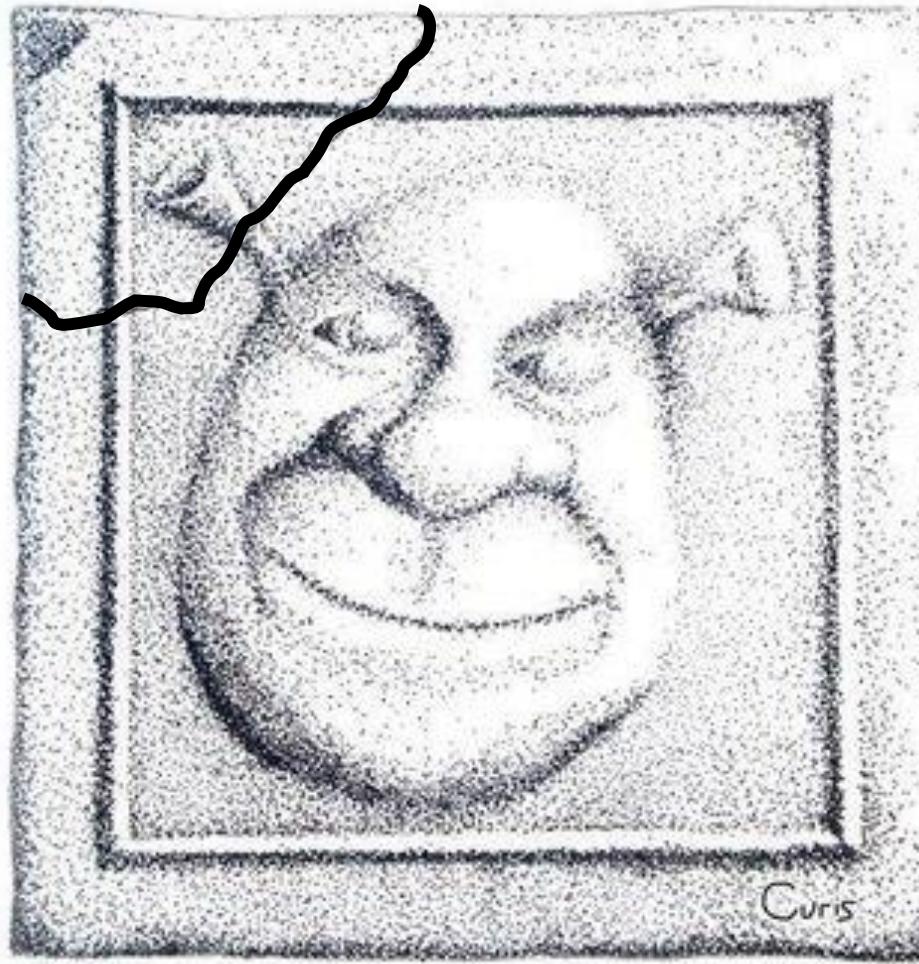
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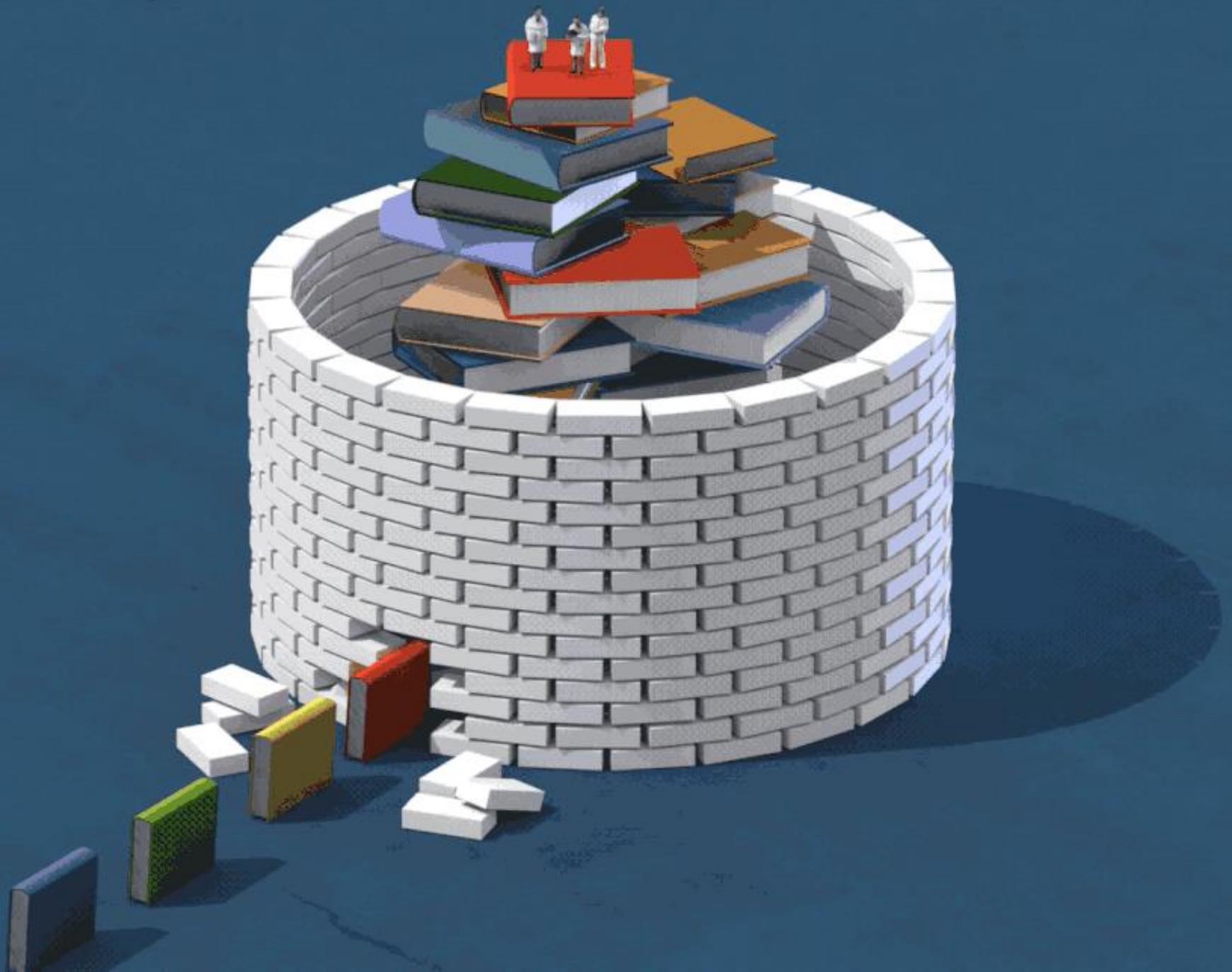


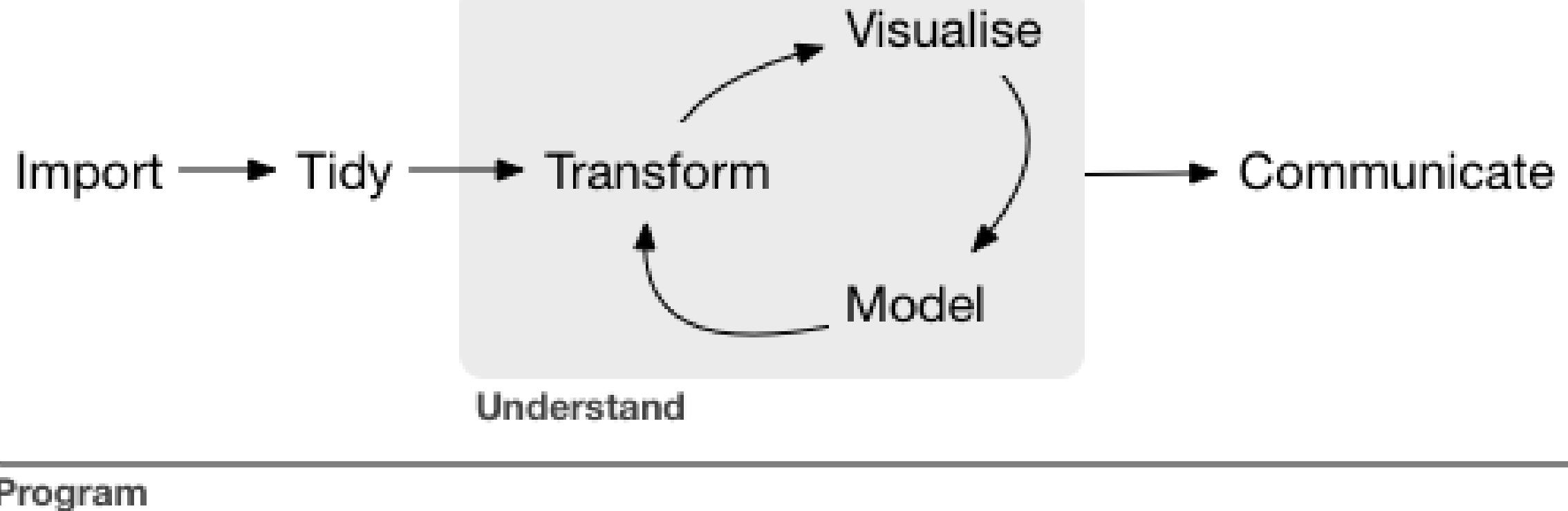


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SCULPTED STONEWORK
FRAGMENT

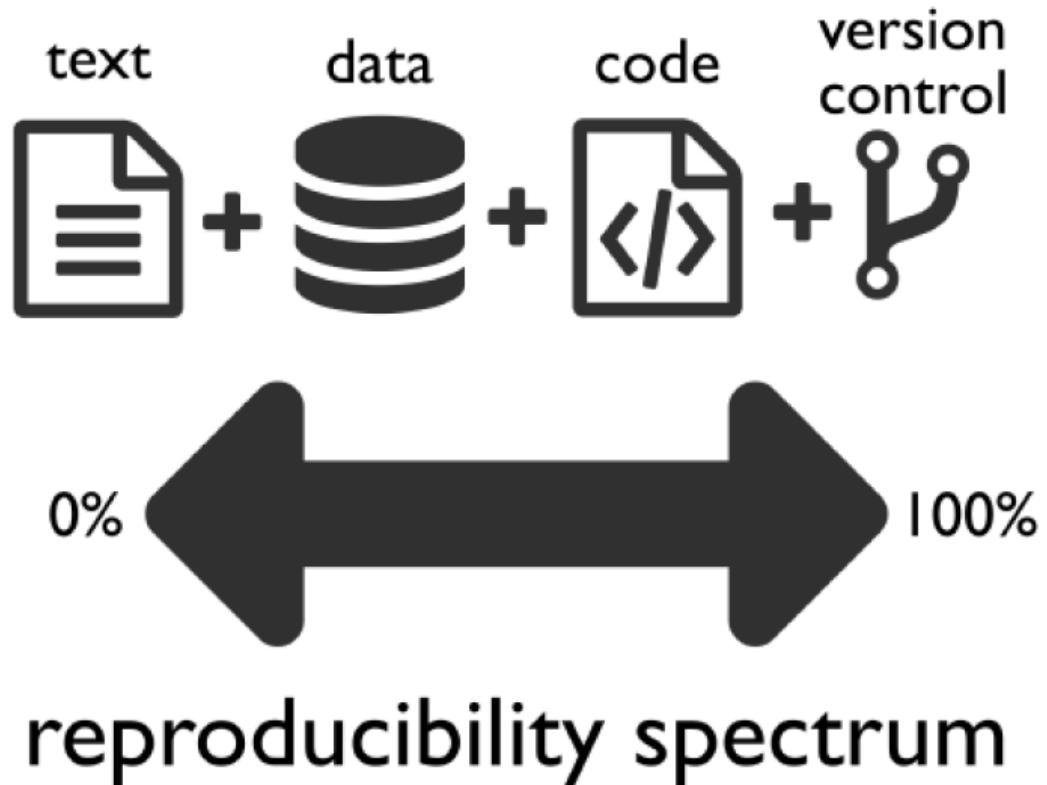


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RECONSTRUCTION





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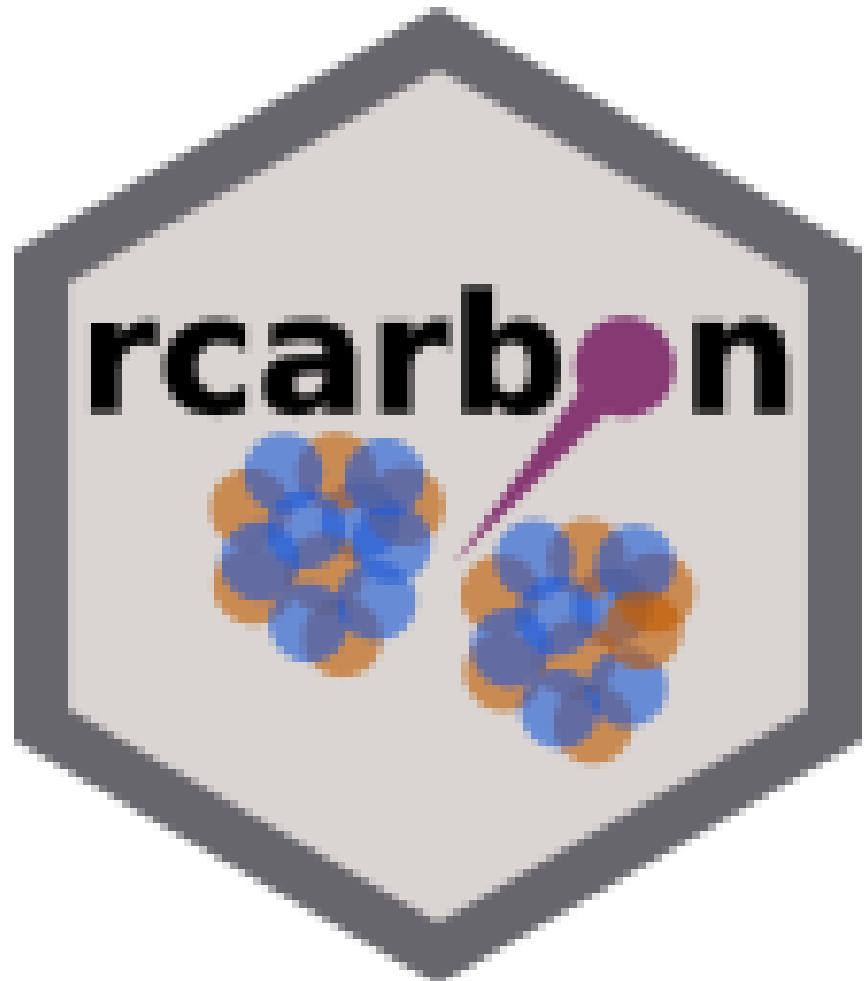


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See also Pernačka, R. (2016). Computational Reproducibility in Archaeological Research: Basic Principles and a Case Study of Their Implementation. *Journal of Archaeological Method and Theory*, 23(2): 1-27. <http://doi.org/10.1007/s10816-015-9272-9>. This figure is CC-BY.

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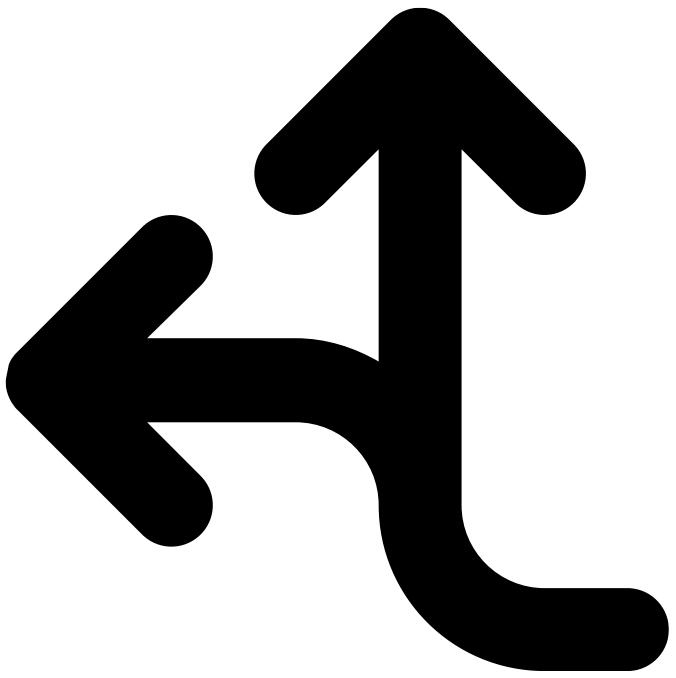


Enrico Crema

[@er_crema](https://twitter.com/er_crema)

Last Version 1.3.2

Crema ER, Bevan A (2021). “Inference from large sets of radiocarbon dates: software and methods.” *Radiocarbon*, 63, 23-39.
<https://dx.doi.org/10.1017/RDC.2020.95>.



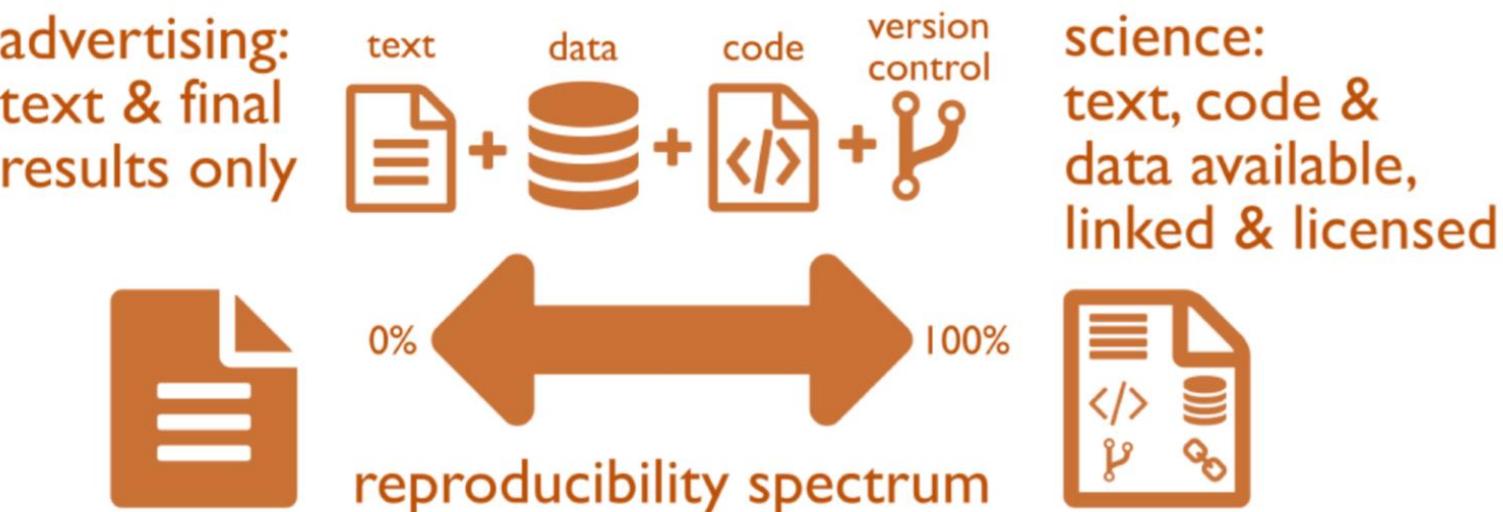
TOMBO	NÍVEL	QUAD.	MATÉRIA PRIMA	PESO (g)	COMP. (mm)	LARGURA (mm)	ESP. (mm)	GRANUL.	CÓRTEX	INTEGR.	TÉCNICA RETOQUE	SUPORTE	TALÃO	NÚMERO DE CICATRIZ DORSAL	PERC.	NÚMERO RETIRADAS	TÉCNICA DE RETIRADA	TIPOLOGIA	OBSERVAÇÃO
VZBI 001	Sup.	-	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 007	Sup.	-	Sílex	21,2	40	40	15	Seixo	AUSENTE	INTEIRO	-	-	CORTICAL	2	PDPMD	-	-	Lasca	Acidente de Sint
VZBI 008	Sup.	-	Sílex	11,2	20	35	12	Seixo	AUSENTE	INTEIRO	-	-	CORTICAL	2	PDPMD	-	-	Lasca	-
VZBI 009	Sup.	-	Sílex	4,8	22	20	10	Seixo	<1/2	INTEIRO	-	-	CORTICAL	1	PDPMD	-	-	Lasca	-
VZBI 011	Sup.	-	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 012	Sup.	-	Sílex	5,3	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 013	Sup.	-	Sílex	32,5	40	30	20	Seixo	AUSENTE	INTEIRO	-	-	CORTICAL	3	PDPMD	-	-	Lasca	-
VZBI 014	Sup.	-	ND	2,6	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Fratura térmica
VZBI 021	Sup.	-	Sílex	11,4	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 043	Sup.	-	Sílex	1,5	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Fratura térmica
VZBI 044	Sup.	-	Sílex	6,4	10	30	20	Seixo	AUSENTE	INTEIRO	-	-	LISO	1	PB	-	-	Lasca	-
VZBI 046	Sup.	-	Sílex	1,1	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 047	Sup.	-	Sílex	3,2	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 048	Sup.	-	Sílex	7,4	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 052	1	Sond. 1	Sílex	1	10	10	3	Seixo	AUSENTE	INTEIRO	-	-	LISO	2	PDPMD	-	-	Lasca	-
VZBI 053	1	Sond. 1	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não localizada
VZBI 049	Sup.	-	Sílex	2,2	20	15	6	Seixo	<1/2	INTEIRO	-	-	LISO	1	PDPMD	-	-	Lasca	Acidente de Sint
VZBI 055	1	Sond. 1	Sílex	3,7	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada/ Fratura térmica
VZBI 056	1	Sond. 1	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 057	1	Sond. 1	Sílex	1,1	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 058	1	Sond. 1	Sílex	24,2	20	33	28	Seixo	<1/2	INTEIRO	-	-	LISO	2	PDPMD	-	-	Lasca	Bipolar(?)
VZBI 062	3	Sond. 1	Sílex	0,3	10	7	3	Seixo	AUSENTE	INTEIRO	-	-	LISO	1	PDPMD	-	-	Lasca	-
VZBI 063	1	Sond. 2	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 064	2	Sond. 2	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 066	1	A 1	Sílex	1,3	22	13	4	Seixo	AUSENTE	INTEIRO	-	-	AUSENTE	1	PDPMD	-	-	Lasca	-
VZBI 068	2	A 1	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não numerada
VZBI 069	1	A 1	Sílex	4,4	20	25	8	Seixo	>1/2	INTEIRO	-	-	CORTICAL	1	PDPMD	-	-	Lasca	PDPMD (apesar do lúvio)
VZBI 070	1	A 1	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não numerada
VZBI 071	1	A 1	Sílex	1,5	18	18	5	Seixo	<1/2	INTEIRO	-	-	LISO	2	PDPMD	-	-	Lasca	Fagonagem
VZBI 072	2	Sond. 2	Sílex	2,4	14	18	9	Seixo	AUSENTE	INTEIRO	-	-	LISO	2	PDPMD	-	-	Lasca	Bipolar(?)
VZBI 073	2	Sond. 2	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não localizada
VZBI 074	2	Sond. 2	Sílex	1	6	10	3	Seixo	AUSENTE	INTEIRO	-	-	DIEDRO	1	PDPMD	-	-	Lasca	Talao diedro
VZBI 075	2	A 1	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não numerada
VZBI 076	Sup.	-	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	-
VZBI 077	2	Sond. 2	Sílex	1	6	10	2	Seixo	>1/2	INTEIRO	-	-	AUSENTE	1	PDPMD	-	-	Lasca	-
VZBI 078	2	Sond. 2	Quartzo	1	10	10	3	Seixo	AUSENTE	INTEIRO	-	-	LISO	2	PDPMD	-	-	Lasca	Quartzo Hialino
VZBI 079	2	A 1	Sílex	0,9	14	14	5	Seixo	AUSENTE	INTEIRO	-	-	PUNCTIFORME	2	PB	-	-	Lasca	-
VZBI 080	2	A 1	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não numerada
VZBI 081	2	Sond. 2	Sílex	2,1	-	-	-		-	-	-	-	-	-	-	-	-	Fragmento	Lasca fragmentada
VZBI 082	2	Sond. 2	ND	-	-	-	-		-	-	-	-	-	-	-	-	-	Descarte	Peca não localizada
VZBI 083	2	Sond. 2	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Resíduo	-
VZBI 084	2	Sond. 2	Sílex	2,3	-	-	-		-	-	-	-	-	-	-	-	-	Resíduo	-
VZBI 085	2	Sond. 2	Quartzo	25,2	50	40	12	Seixo	<1/2	INTEIRO	-	-	CORTICAL	1	PDPMD	-	-	Lasca	-
VZBI 086	2	Sond. 2	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Resíduo	-
VZBI 087	2	A 1	Sílex	0,5	14	12	4	Seixo	AUSENTE	INTEIRO	-	-	LISO	1	PDPMD	-	-	Lasca	Acidente de Sint
VZBI 088	2	Sond. 2	Sílex	1	-	-	-		-	-	-	-	-	-	-	-	-	Resíduo	-



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Daniela de Queiroz



2012



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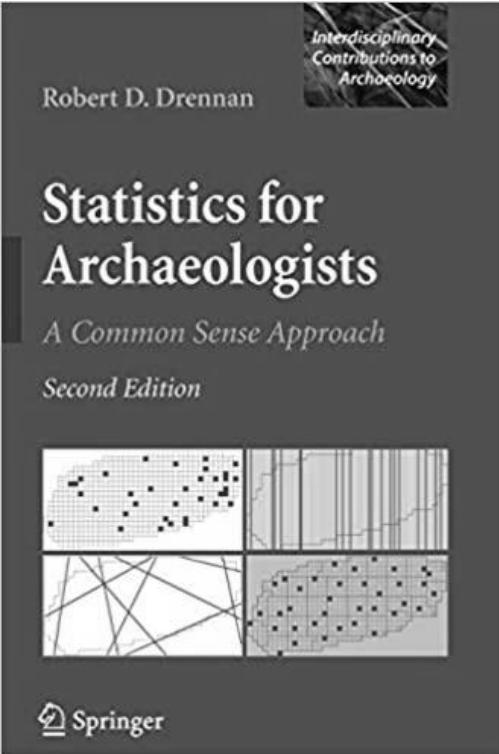
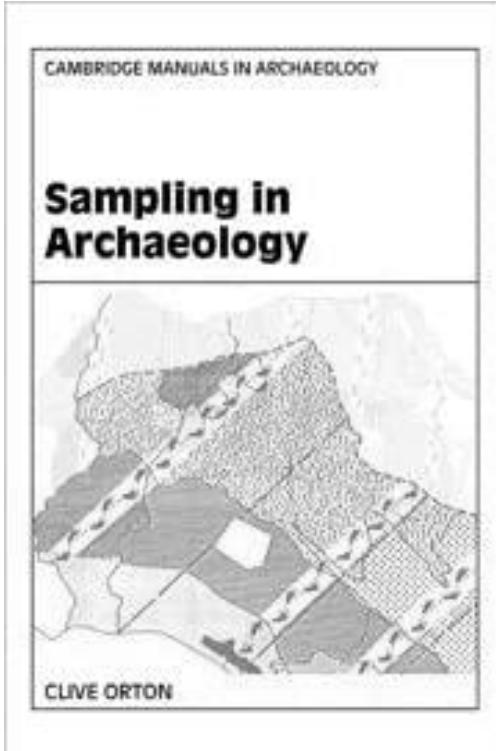
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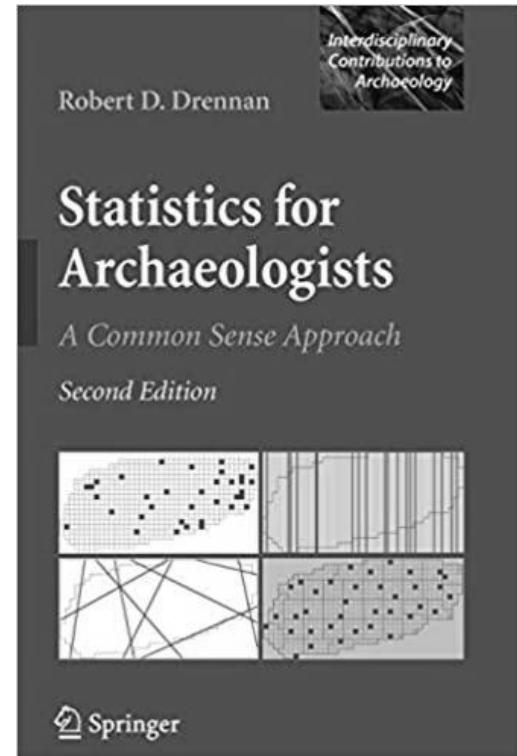
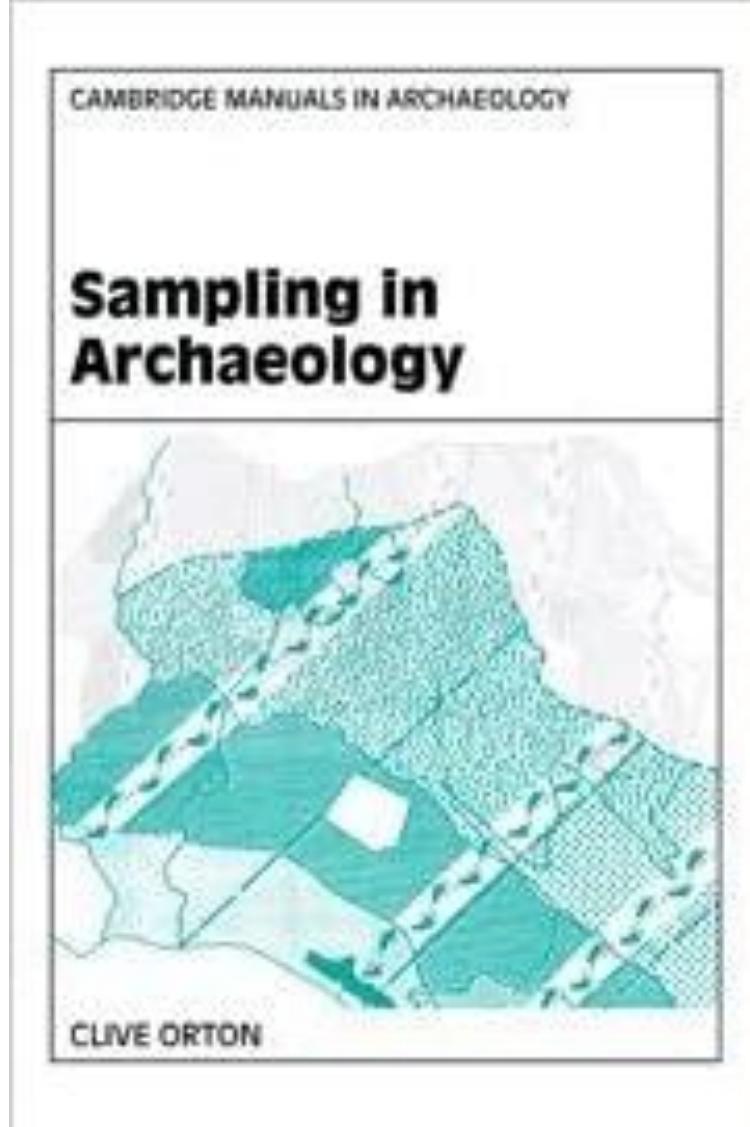
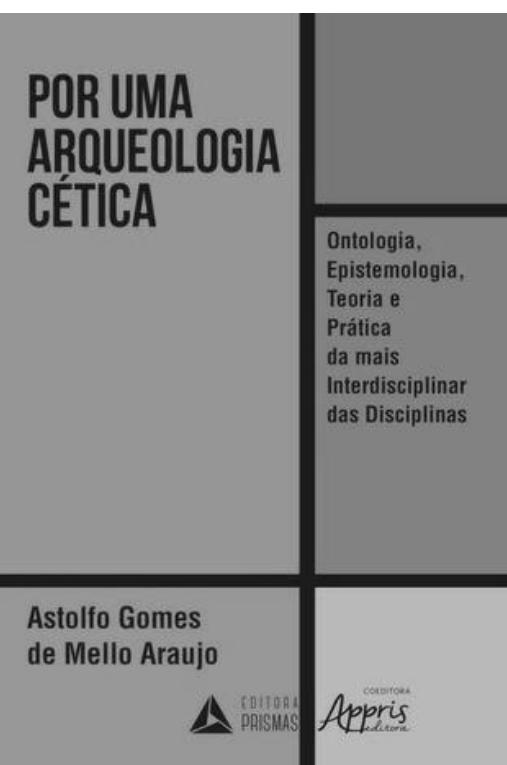
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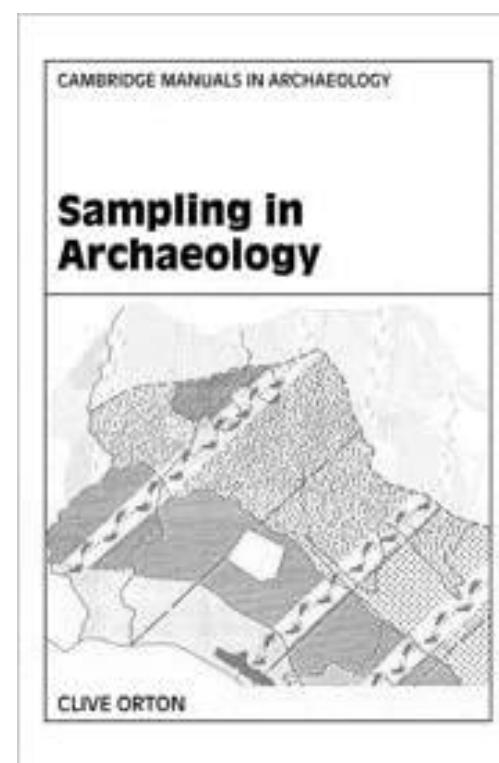




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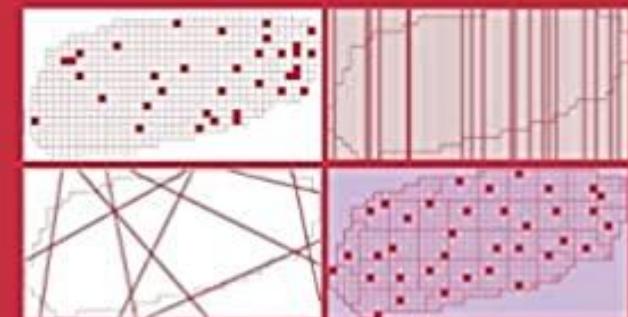


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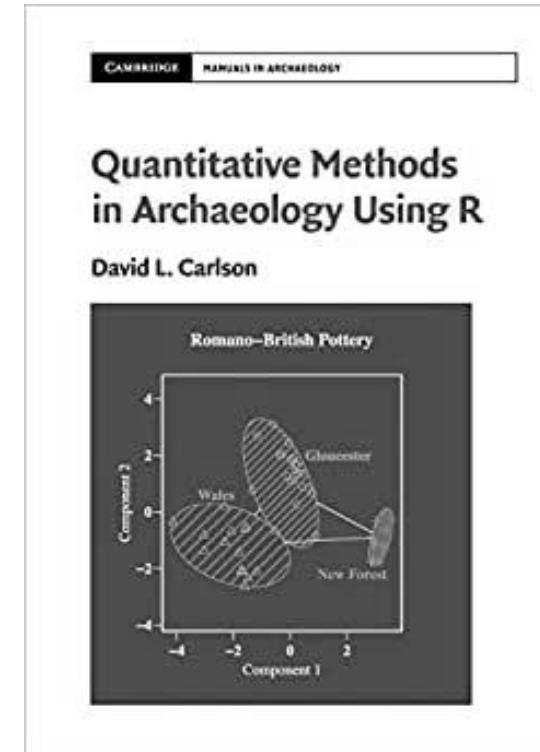
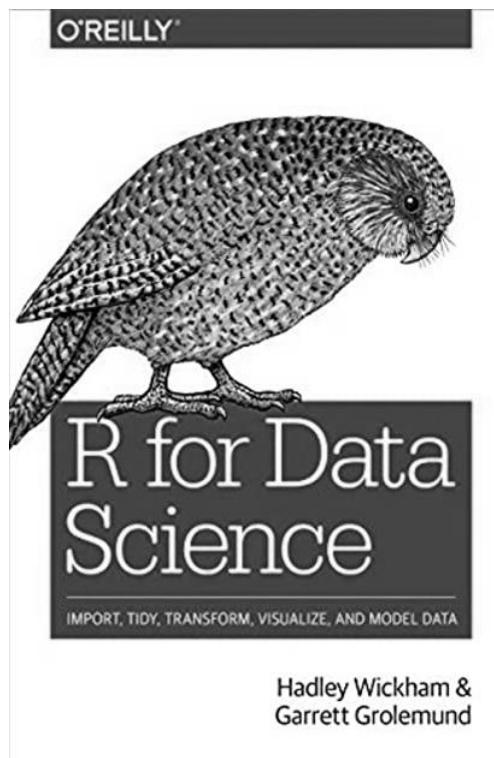
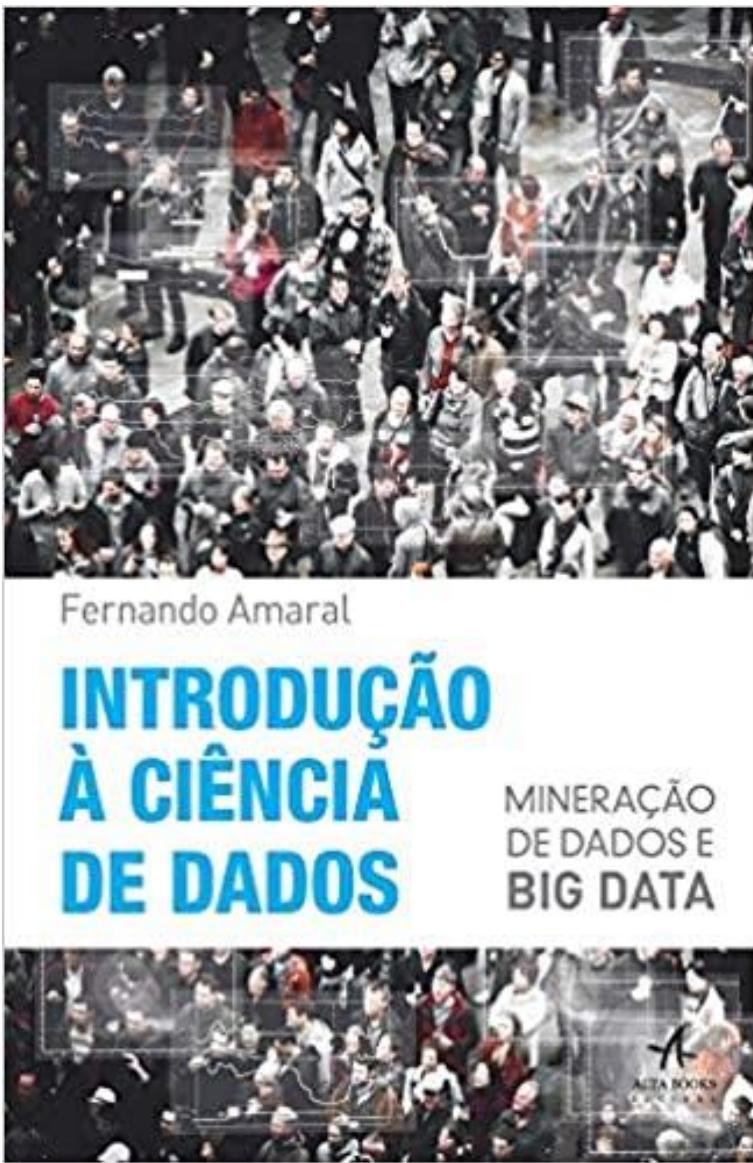


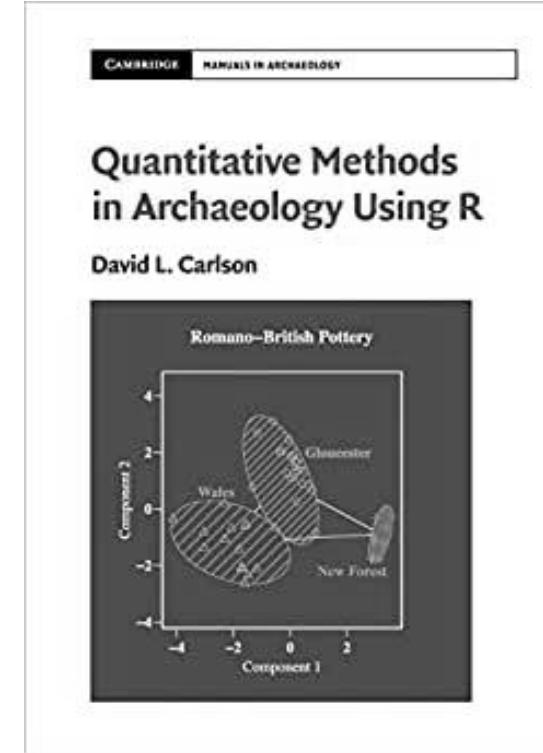
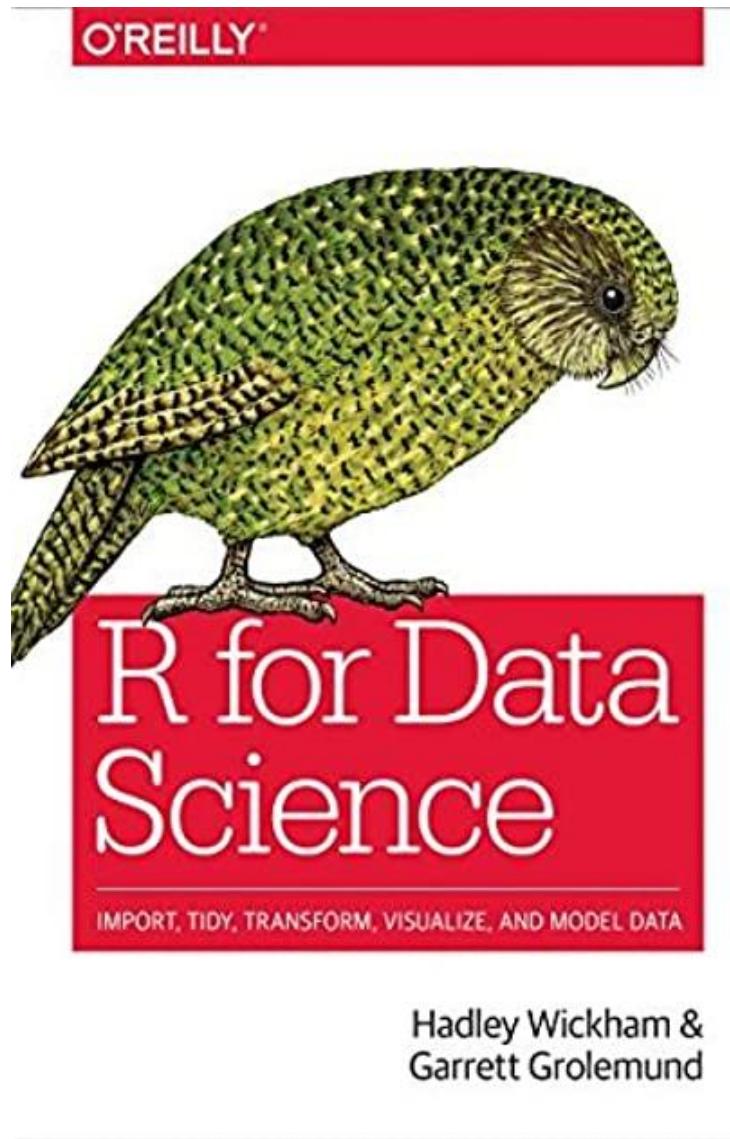
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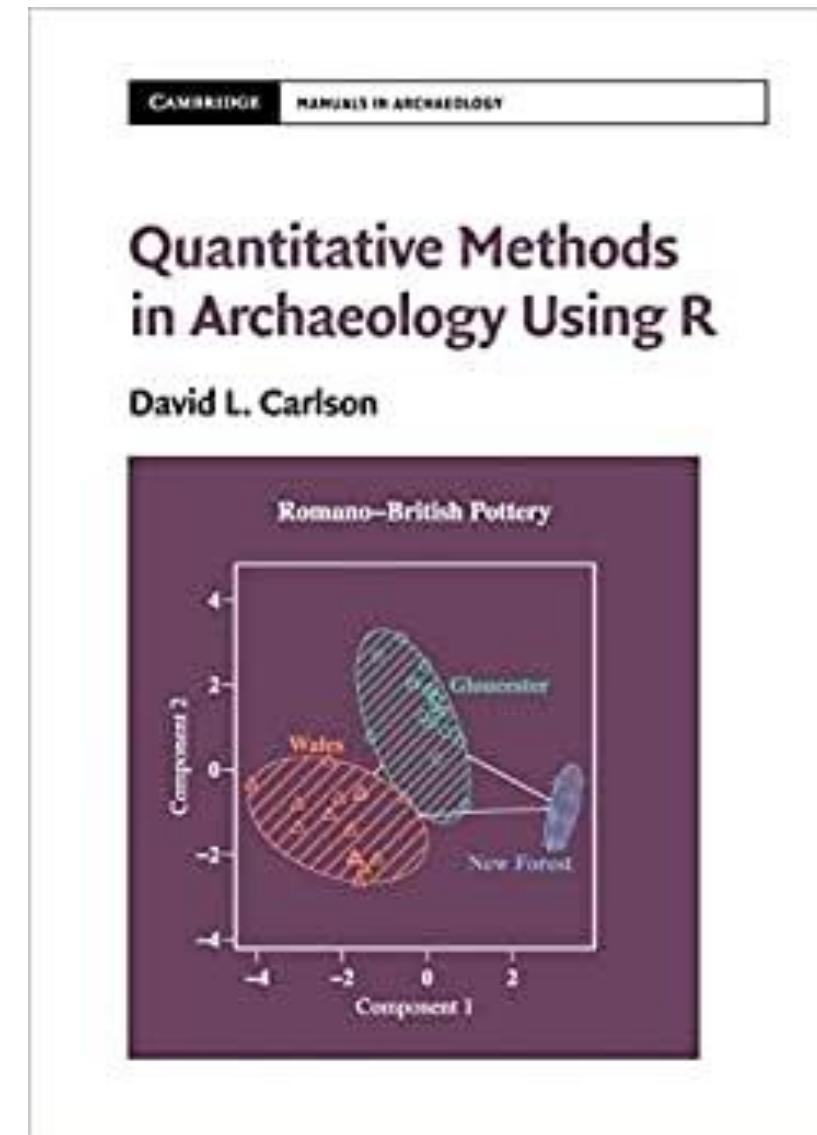
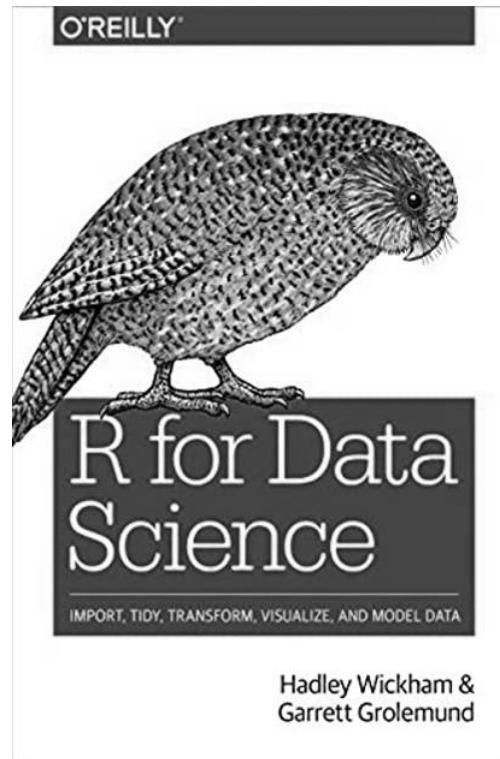
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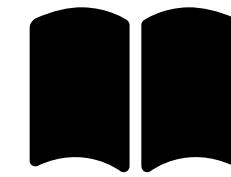
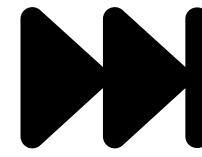
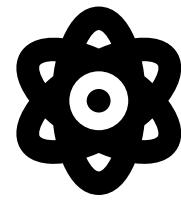
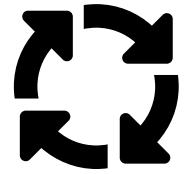
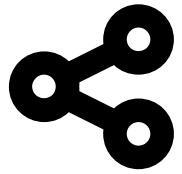
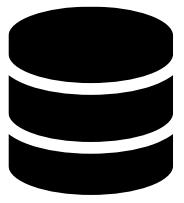


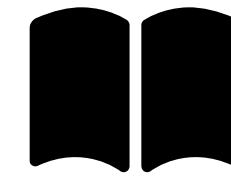
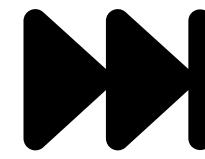
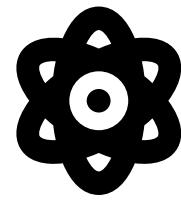
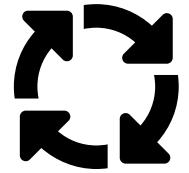
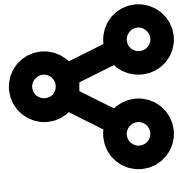
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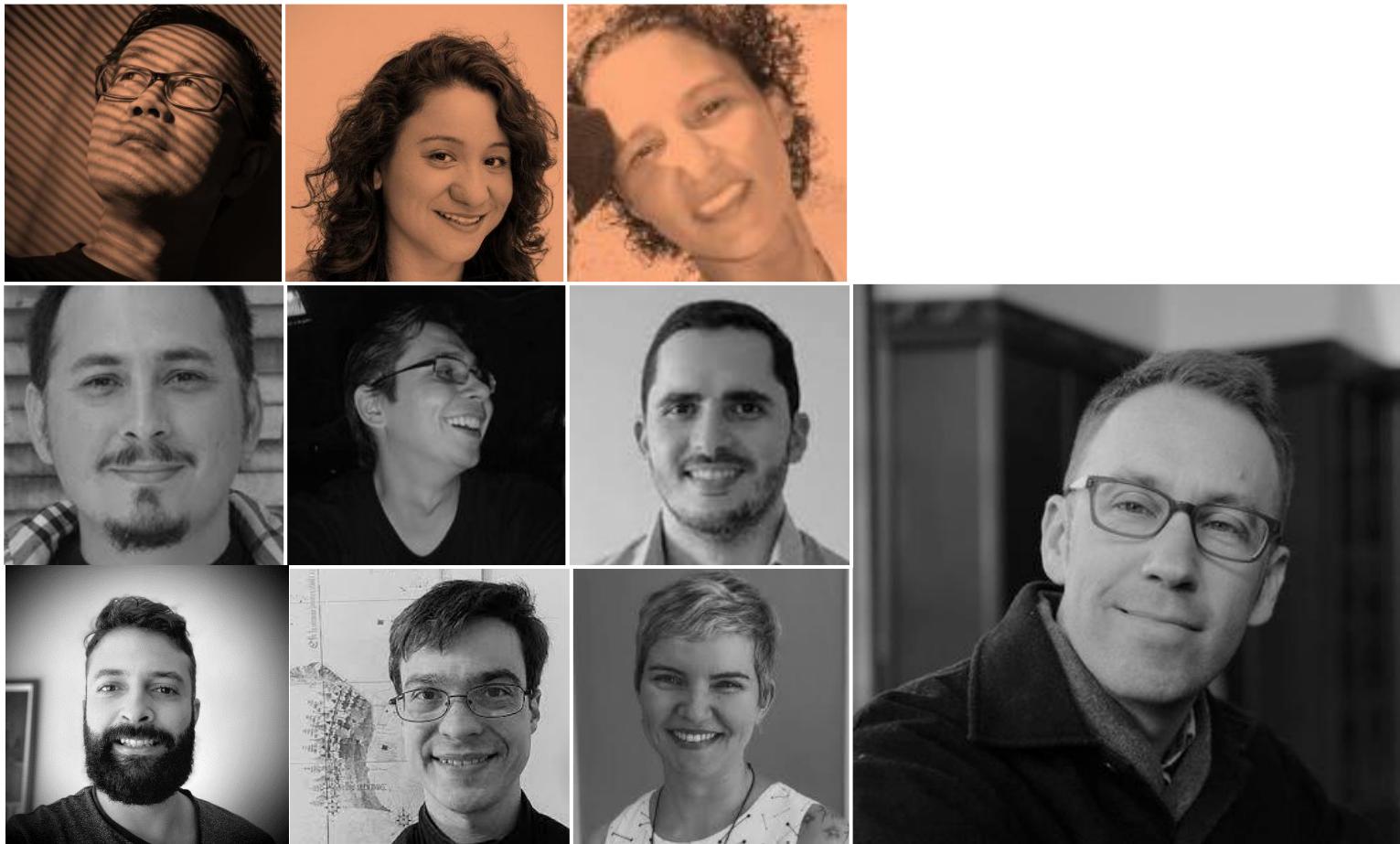


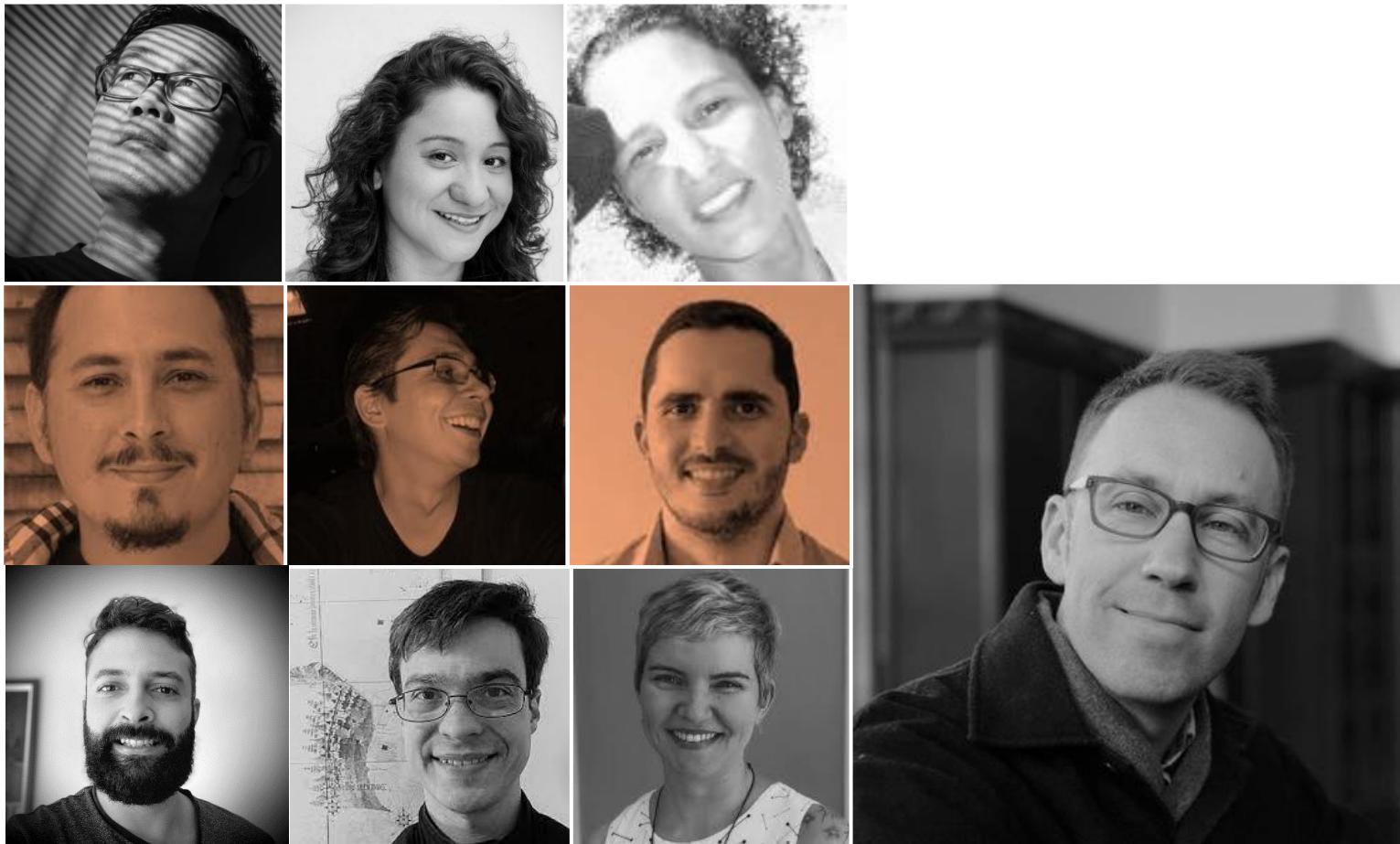


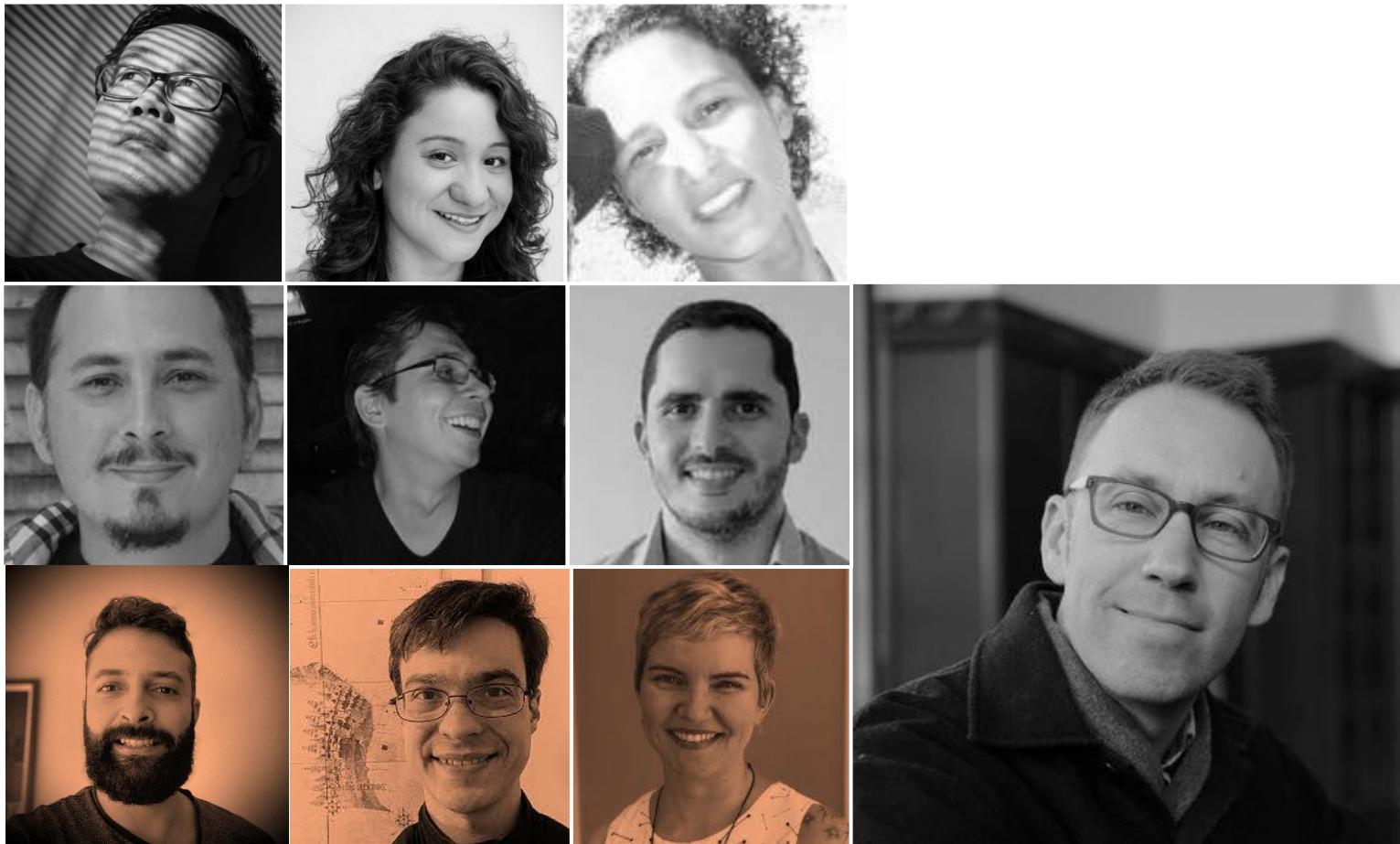
Abandoning the habit of secrecy in favor of process transparency and peer review was the crucial step by which alchemy became chemistry.

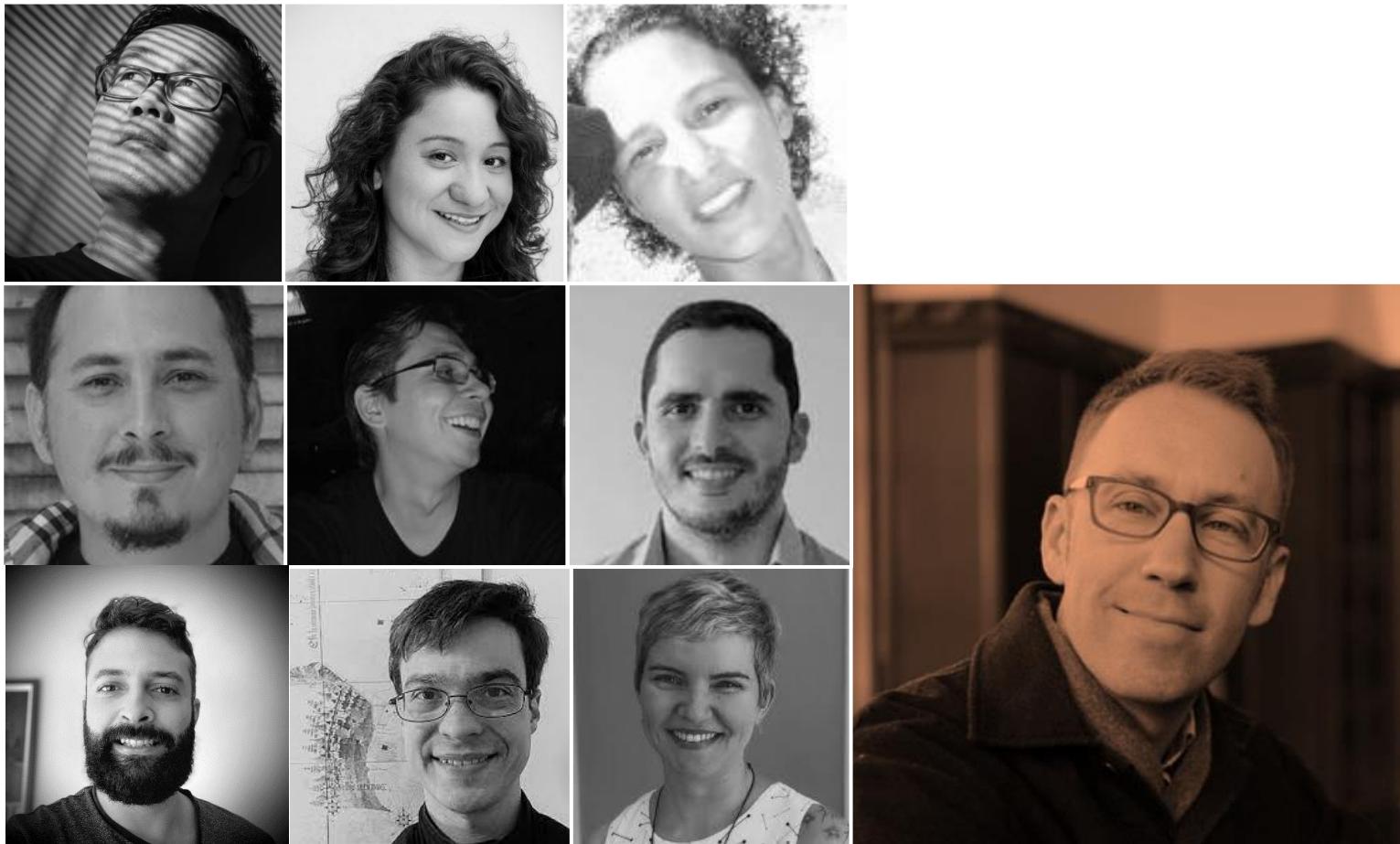
Raymond, E. S., 2004, The art of UNIX programming: Addison-Wesley.

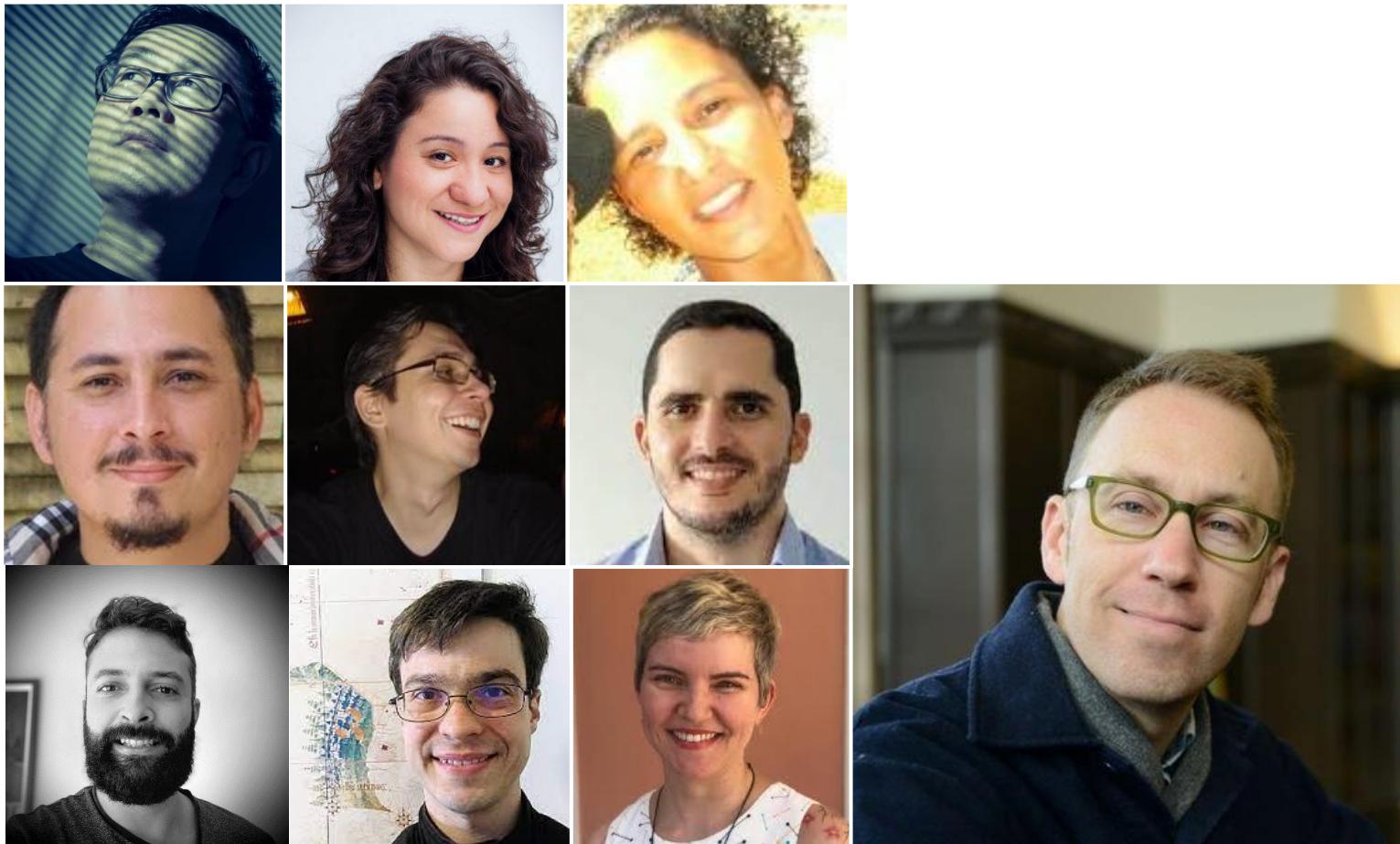
















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